













**A TEXT-BOOK OF PHYSICAL EXERCISES**



# PHYSICAL EXERCISES

ADAPTED FOR

THE USE OF ELEMENTARY SCHOOLS

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WITH PREFACE

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## PREFACE

THE Elementary Education Act of 1870 was in itself such a revolution in our ideas of the national duty towards our children, and necessitated so many changes in so many places, that little surprise can be expressed if most of the time since that period has been spent in the organisation of the administration, rather than upon the matter to be taught in the schools.

At the present moment our elementary schools, while conspicuous among all our schools for the excellence of their methods, have yet much to learn, and much to alter, in what is being taught.

One omission from the curriculum of most of the elementary schools until the last few years has been that of systematic physical exercise; and this, in spite of the fact that in all schools of a higher grade this subject has assumed such importance that in some cases it seems in danger of overshadowing all the others.

The Education Department, by its code of 1895, has now made the teaching of Physical Exercise in the senior part of an Elementary School one of the conditions of earning the principal

grant: and it may be interesting to school managers to know that under the Birmingham Board such teaching has been carried out in all its schools for the last ten years.

One hour and twenty minutes a week is the time assigned for this exercise (comprising four lessons of ten minutes each, and one of forty minutes), which is carried on in the playground if the weather permits, otherwise in the central hall, or in the classrooms with all the windows wide open.

In spite of the requirements of the Education Code, and of a wide curriculum, this diversion has not, in the opinion of the bulk of the teachers, interfered with the progress of the scholars. On the contrary, it has not only brightened them up and improved their physique, but it has also instilled into them habits of prompt and ready obedience to the word of command so useful alike during school life and afterwards.

It seems very desirable that those interested in the question should have some text-book to which they can refer for guidance and information; and it is extremely important that such a book should be produced under the direction of those who are acquainted in the first place with the true physiological basis of exercise; and in the second place with a knowledge of the practical conditions under which a reasonable scheme can be conducted. From the medical point of view Dr. Carter has long given this subject his careful attention, and has had opportunities of studying these questions in Birmingham which are perhaps unique. On the other hand, in Mr. Bott we have the organiser of the whole of the exercises now given in the Birmingham Board Schools, and one who, by his painstaking

efforts and ready sympathy, has won golden opinions from the teachers with whom he is in close contact.

I need only add an expression of my firm conviction that some form of systematic physical training will very shortly occupy a reasonable time in the curriculum of every school in the kingdom, and that both teachers and managers will agree that it is as necessary, as it is desirable, for the well-being of the children.

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**PART I**  
**THE PHYSIOLOGY OF EXERCISE**



## THE PHYSIOLOGY OF EXERCISE

STRICTLY speaking, physical education has to do with all conditions on which the material welfare and physical well-being of the body depend, such as exercise, rest, recreation, food, clothing, personal cleanliness, and the like. The present work, however, touches only upon one side of physical education, namely, the employment of muscular exercises, carefully selected and organised, with the general object of increasing the efficiency and power of an individual to fulfil the duties of life, and more especially considered in relation to the requirements of children in public elementary schools.

Scope of  
physical edu-  
cation.

With these objects in view, it is clear that everything depends upon the care and skill with which such exercises are selected and graded to meet the varied requirements of sex, age, development, and bodily health of pupils, the limitations imposed by school work of other kinds, and many other practical considerations. Though we have yet much to learn with regard to the exact relation of muscular work to all these conditions, experience has done a great deal to show us what is necessary and desirable; and as the whole subject is now very properly receiving much more attention than has formerly been given to it, valuable additions to our present stores of knowledge may be reasonably expected in the near future.

Importance of  
collateral con-  
ditions.

One point deserves to be prominently kept in mind from the outset, namely, that the prime object of giving physical exercises a place in the ordinary routine of school work is not to cultivate

Aims at good  
general  
development.

special excellence or skill in any single athletic exercise, but to promote healthy physical development of the whole body symmetrically, harmoniously, and in good proportion, and to encourage a high level of all-round physical efficiency. Starting on this basis, it is wise to leave special exercises of skill, activity, and strength to be acquired at a later period in life, when they can be carried out with much greater safety and general advantage than in early youth.

Close relation  
of physical  
with other  
kinds of edu-  
cation.

The same principles of symmetry, harmony, and good proportion apply with equal force to the different kinds of education, in their relation to each other. Mental, moral, and physical education have often been regarded as if they had little or nothing in common with each other; but it is at last—though somewhat tardily—recognised that such an attitude is quite untenable. No one of them can be separated from the other two, without some distinct and definite loss of strength, efficiency, and beauty in the final result. Physical exercise has too long been left to chance, and the spontaneous desire of the young for active muscular exercise; and experience shows that this haphazard method is hopelessly unequal to the exigencies of modern life, especially among the children in the elementary schools of our large towns.

Classification  
of physical  
exercises.

The purposes for which physical exercises are employed may be roughly classed under *three* heads, namely, *hygienic*, *recreative*, and *educational*. Hygienic exercises are those which are selected for their special influence upon the health of the body, and more particularly as a means of treating disorders and deformities of various kinds. Recreative exercises, like outdoor games, for instance, have for their chief object the amusement, interest, and pleasant occupation of those who take part in them. Educational exercises, on the other hand, are designed to take a definite place in the general plan of unfolding and developing the faculties of the young, in association with mental and moral training. Their characteristic features are (1) that they are specially organised and graded to correspond with the ordinary course of

Special  
features of  
educational  
exercises.

natural development; and (2) that they are conducted throughout under the direct control and command of outside authority, in the person of the teacher. Of course it will be understood that such a classification of physical exercise is more or less arbitrary. For instance, recreative exercises owe a large part of their value to the fact that, when conducted under proper conditions, they are healthful and invigorating. Again, educational exercises are, or at least ought to be, in some degree recreative; for if they fail in arousing the interest of or in giving pleasure to the pupils, they lose a great deal of their influence for good. It is sometimes said that drilling, marching, and general "setting-up" exercises without fixed apparatus are dull and uninteresting to children. Our experience in the schools of this city, extending now over several years, is entirely opposed to this view, and a strong opinion prevails that where contrary results are met with, the fault lies with the mode of teaching, and not with the exercises.

The claim of physical exercise to occupy an important place in any complete scheme of education rests mainly on two facts:—(1) its influence as an aid to school discipline; and (2) its influence as a means of making the scholars better fitted physically to contend with the work which they have to do.

Claims of physical exercise to a place in general education.

Every practical educationalist will agree that a fundamental requisite in the training of children lies in the establishment of order, and the cultivation of a habit of unflinching obedience. Not so very long ago, these were secured—in so far as it is possible to secure them—by the rough and ready rule of the rod. Without denying that there is still a sphere of activity for the judicious use of this mode of punishment, experience shows that in the matter of order and obedience quite as good results can be secured by regular, well-organised mass-exercises. In combined exercises, such as marching, wheeling, and classes with dumb-bells, staves, or clubs, each child in the squad is on terms of practical equality with all the rest; there is no opportunity afforded to any one of obtaining distinction at the expense of the

Exercise as an aid to order and discipline.



others; the success of the movements depends throughout upon complete subordination of every child to the order and harmony of the whole class; and this last can only be obtained by the strictest attention to the instructions and orders which issue from the teacher. The children like their work, they soon learn to appreciate what is required in order to command a successful performance, and thus come to take an eager and intelligent interest in the means employed to secure it. In this way, children can be brought to recognise from their earliest years that there is a right way and a wrong way of doing even the very simplest things; they imperceptibly acquire the meaning of those invaluable qualities "form" and "style"; and unconsciously develop the habit of doing what they are told to do, and doing it promptly—a habit which becomes strengthened by use. Lastly, there is this twofold contrast with the older method of ruling with the rod, namely (1) that the habit of order and obedience to outside authority grows and develops from *within*, instead of being imposed from *without*; and (2) that its acquisition tends to bring the teacher and the taught into closer and more friendly relationship, instead of risking their mutual alienation.

Exercise as an aid to vigorous health.

The way in which physical exercise strengthens the scholar for the work which he has to do will be set forth in later sections of this introductory chapter; but at any rate it is abundantly clear that in these modern days of unrestricted competition (the stern realities of which, alas, the rising generation are made to feel at far too tender an age) not only do the prizes of life tend more and more to fall to the strong rather than to the clever, but the task even of simply holding one's own is one which year by year inflicts a greater strain upon the physical powers.

With this preamble we propose to briefly consider some of the more important physiological facts and principles with which a teacher ought to be acquainted before he can be safely entrusted with the physical training of children, after which we shall endeavour to indicate some of the practical questions raised in the attempt to carry these principles into actual practice.

Nutrition is the sum of those processes by which the living materials of the body are renewed by the appropriation and conversion of nutriment, in the shape of food and fresh air. During childhood and adolescence the processes of nutrition are more active than those of wasting and disintegration, which result from the ordinary wear and tear of life. Consequently the substance of the body increases, partly by an increase in the size of the elementary particles of which it is composed, but to a much greater and more important extent, by the formation of new tissue, which results from an actual multiplication of its constituent particles. This increase in body substance, which is so characteristic a feature of early life, is summed up in the word "growth." In middle life nutrition does little more as a rule than balance the results of wear and tear; while in old age nutrition becomes very slow and languid, and progressively yields to advancing disintegration and decay.

Nutrition and growth.

The elementary facts with reference to the growth of the body in early life are full of interest and importance to those practically engaged in teaching the young, and therefore demand some notice here. Growth can be measured by the rate at which the body increases in height and weight. Any failure of nutrition is invariably attended with some depreciation in the rate of growth. Diminished increase, or actual loss of weight, affords the earliest indication of failing nutrition; and periodical measurements of the weight of growing children may often thus reveal the existence of disturbed health long before other outward signs are such as to attract attention. If the defect in nutrition is slight and temporary, growth in height may not at first be obviously interfered with; but if at all severe and protracted, growth in height may be entirely checked for the time, while the body weight progressively falls.

Experience seems to teach us that in a growing child the demands of growth have a natural first claim upon the available energies of the body, and, until these demands are approximately satisfied, the bodily energy cannot be drawn upon for the per-

formance of work without serious risk of disturbance of health, and interference with the progress of development; and this particularly applies to work which taxes the higher nervous centres. It follows, therefore, that all work required from a rapidly growing child—especially when not thoroughly well nourished—should be both moderate in amount and relatively easy of accomplishment. This primary rule must never be lost sight of by teachers in selecting physical exercises for young children in schools.

Rate of  
growth in  
height and  
weight.

The following tables show with tolerable accuracy the average rate of growth in height and weight for boys and girls from the age of 5 years to maturity. The table for boys is constructed from the observations of Mr. Roberts in this country; and that for girls, from the observations of Dr. Bowditch upon Boston (U.S.A.) schoolgirls, irrespective of nationality:—

TABLE SHOWING RATE OF GROWTH IN BOYS

Age last Birth-day.	Height. Inches.	Yearly Increase.	Weight. Pounds.	Yearly Increase.
5	41·15		37·71	
6	43·18	2·03	40·67	2·96
7	45·15	1·97	44	3·33
8	46·92	1·77	47·15	3·15
9	49·52	2·60	51·20	4·14
10	51·52	2	55·50	4·21
11	52·87	1·35	60·15	4·65
12	54·45	1·58	64·52	4·37
13	56·56	2·11	71	5·48
14	58·55	2	79·57	8·57
15	60·77	2·21	91·43	11·86.
16	63·42	2·65	107·86	16·43
17	64·95	1·53	118·08	10·22
18	65·69	1·74	147·25	9·17
19	66·37	·68	131·48	4·23
20	66·80	·43	135·28	3·80

TABLE SHOWING RATE OF GROWTH IN GIRLS

Age last Birthday.	Height. Inches.	Yearly Increase.	Weight. Pounds.	Yearly Increase.
5	41.29		39.66	
6	43.35	2.06	43.28	3.62
7	45.52	2.17	47.46	4.18
8	47.58	2.06	52.04	4.58
9	49.37	1.79	57.07	5.03
10	51.34	1.97	62.35	5.28
11	53.42	2.08	68.84	6.39
12	55.88	2.46	78.31	9.47
13	58.16	2.28	88.65	10.34
14	59.94	1.78	98.43	9.78
15	61.10	1.16	106.08	7.65
16	61.59	.49	112.03	5.95
17	61.92	.33	115.53	3.50
18	61.95	.03	115.56	.03

From the above tables it will be seen that there is a progressive increase in growth in height and weight during the whole of early life, both for boys and girls. In boys (roughly speaking) the annual rate of growth somewhat irregularly slows down at first, reaching a minimum during the eleventh year, at which time growth is remarkably slow. From this point, the rate rapidly increases, and reaches a maximum during the sixteenth year, from which age it again quickly subsides until growth ceases with the arrival of maturity, at 21 years of age or later. Growth of boys.

In girls the same general variations are observed, but at an earlier age than in boys. Thus, the first period of slow growth reaches its minimum during the ninth year; the maximum rate, during the thirteenth year; and there is little or no increase as Growth of girls.

a rule after the eighteenth year. It should be understood that the tables only indicate *average* heights and weights, and many instances will be met with which exceed or fall below the figures given. Nevertheless, all will exhibit relative variations similar to those which have just been described, marked deviation from which is suggestive of "something wrong."

Importance of  
regular obser-  
vations on  
growth, in  
schools.

It is much to be desired that all schools should be furnished with the necessary apparatus for measuring height and weight, and that regular records should be kept of the growth of school children, observed at intervals—say of three months. Were such records available, they would not only afford teachers useful suggestions in the management of their pupils, but would also yield materials of the greatest possible value for scientific purposes, likely some day to be of much practical service. As Sir Crichton Browne very justly says, "the knowledge of the rate of growth is often essential to the safe conduct of education."

Puberty.

By far the most important epoch in the course of a child's development is that stage by which it passes into adolescence—the epoch of "puberty." In infancy and childhood the energies of the body are exclusively concerned with the building up of parts and the development of functions which are necessary to the existence of the individual. Puberty, on the other hand, is characterised by active functional and structural changes which are designed to fit the individual for the perpetuation of its species. Puberty occurs in boys, in this country, from 14 to 16 years of age, while in girls it occurs somewhat earlier, namely, from 13 to 15 years of age. In both boys and girls it is a period of far-reaching and profound changes in the bodily organisation, which make a severe and peremptory demand upon the bodily energies; and as a necessary result, the nervous system is in a highly unsettled state, easily disturbed by slight causes, and especially liable to exhaustion and depression. It behoves all teachers therefore to be particularly careful to avoid overtaxing the nervous energies of their pupils at this time by fatiguing work, for neglect of such precaution is a

fruitful cause of disease and nervous break-down, as the experience of every medical practitioner can abundantly testify.

In order to intelligently appreciate the value of muscular exercise as a feature in education, and to rightly understand the principles of its employment, it will be necessary to inquire briefly what light physiology can throw upon the nature and effects of muscular action. Muscular substance is made up of bundles of soft fibres—about an inch in length,—forming masses of variable size and shape, each of which is called a muscle. The middle part or “belly” of a muscle is free and unattached, while the two ends are fixed to bones by means of cords or bands of fibrous tissues called “tendons”—one end to one bone, and the other end to another bone, the intervening muscle and its tendon always passing over at least one joint. A movement of a limb is produced by one or more muscles drawing their ends closer together, so that the bones to which the muscle is fixed are moved upon the intervening joint. In thus drawing its ends together, or contracting, a muscle becomes at the same time proportionately thicker and larger in the middle, and therefore its actual bulk remains the same whether contracted or relaxed.

Structure and  
functions of  
muscular  
tissue.

The power to contract or shorten is the characteristic feature of muscular tissue; and the question now arises, How is contraction caused? Every individual fibre of which a muscle is composed is directly connected with a minute soft nervous filament. These nervous filaments are gathered up into larger threads, and these again into larger and larger nervous cords (nerves) which can be traced into the spinal cord or brain where they are connected with groups of nerve-cells (nerve-centres). By the action of nervous centres, nervous impulses are sent along the nerves to the muscles in connection with them, which on their arrival determine muscular contraction. In this way every muscle is provided and connected with a nerve-centre, by the activity of which its contraction is excited. These elementary

motor nerve-centres are variously grouped together, and are brought into connection by means of nerve-fibres with higher centres in the brain, the activity of which determines and controls the performance of movements requiring the co-operation of several muscles at the same time. Lastly (so far as voluntary movements are concerned), these centres for different movements are under the supreme control of that part of the brain which is the source of volitional action, and possesses the power of singling out, so to speak, and combining the particular movements desired, and of setting them in action; while the latter, in their turn, call into play the elementary motor centres concerned, and finally determine the necessary muscular contraction. Thus it will be seen that, roughly speaking, there are three grades of nervous centres concerned in the performance of every definite voluntary muscular movement — (1) the centres directly instigating individual muscular contractions; (2) the centres which determine the combination of various muscular contractions for the performance of some definite movement or movements; and (3) the volitional nervous centres, which have the power of selecting and combining the various movements required for the purpose in view.

But this is not all. Not only is there a direct nervous path along which messages for movement pass from the brain above to the muscles below, but there is a direct nervous path for the passage of messages of sensation from the muscles below to the brain above, which bring to the latter exact information of the condition, behaviour, and response of muscles.

Muscle cannot  
be studied  
apart from  
nerve.

The reason for this brief technical description is to bring out the important facts that the muscles are in reality motor appendages to the nervous system, endowed with properties which are capable of converting a nervous impulse into mechanical work; and that all physical exercise not only involves the action of muscles, but the action of a whole series of important nervous centres as well. The apparatus of movement then is made up of a nervous part and a muscular part.

The laws which govern the action of the nervous part of the apparatus of movement are essentially the same as those which govern the action of the muscular part; both are abundantly supplied with blood which brings to each alike the material needed for its nourishment, and carries away the waste products of its wear and tear; both build up their own substance in accordance with the same principles; and both suffer alike from want of proper nourishment, overwork, and so on. So intimate is the connection between the two, and so closely are their interests interwoven, that whatever ministers to the well-being of the one, extends its favourable influence to the other. Healthy nervous development and action are in fact necessary to the acquirement of muscular power; and healthy muscular development and action are no less necessary to the acquirement of nervous capacity and power.

If we compare the muscular endowments of an adult with those of a little child we cannot fail to be struck with the enormous difference not only in power and variety, but with their much greater refinement or specialisation (as it is called), and the much greater extent to which all movements are under the control of the will. It is obvious, however, that this state of things does not come about all at once; it is a work of time. With that active growth of the nervous system in general and of the brain in particular which characterise early life, fresh powers come into existence, in a definite order, each at its appointed time, and with a rate of development which is special to each. Thus, the nervo-muscular apparatus concerned in the maintenance of the erect posture, and in walking, comes into existence much earlier, and develops more rapidly than that which concerns the movements of the upper limbs. Again, the movements of the body of a limb are acquired much earlier and more easily than those of its extremity—the foot or hand. Indeed, the more refined and highly specialised movements of the hand and fingers not only appear late, but require years of careful training to attain full proficiency.

Physiological  
development  
of muscular  
endowments.



Practical application of preceding principles.

In selecting physical exercises for the young we must always keep these facts in view. Any attempt to foster and develop the movements of one part before those which naturally precede it in point of time, is certain to be followed by perversion and disturbance of a child's nervous development. Thus leg and trunk movements should receive attention before those of the arm; those of the limbs as a whole before those of its individual parts. The nature of the superstructure will depend largely on the manner in which the foundations are laid, and it is reasonable to expect much greater facility in the acquirement of specialised movements when the simpler and more elementary movements upon which they are based have previously received an adequate training. A further reason for following the natural order of development in physical training lies in the fact that the time when fresh powers are just budding is that which experience shows to be most favourable for their full development under appropriate training. If the opportunity then occurring is allowed to slip by without due training, the powers in question either are not fully attained afterwards, or at any rate are attained with a much greater expenditure of time and trouble. The cultivation of faculties at other than the time appointed by Nature is, I may say, not by any means an unfrequent cause of nervous ailments, such as headaches, nervous twitchings and restlessness, chorea, or even mental derangement.

Local effects of exercise.

1. On blood-supply.

2. On size and strength of muscles.

Turning now to certain details, it may be pointed out that the first effect of exercise is to increase the blood-supply of the parts concerned, as a result of which their nutrition becomes more active, and their growth and development are promoted. For such reasons the muscles increase in size and strength, the nervous centres in connection with them acquire greater power, and the tendons and the joint-structures attain greater suppleness and strength. There is an obvious limit to the extent to which the size of muscles can be increased by exercise, and when the

latter is too severe or protracted, the muscles may waste. Muscular action, in common with all other forms of functional activity, is also attended with the formation of heat, and the fact of the body becoming heated by exercise is of course an experience familiar to all. A certain degree of heat is necessary for the maintenance of bodily activity, and exercise has an important share in keeping up the bodily temperature to the proper point. Those who take too little exercise are therefore apt to suffer from cold hands and feet, are liable to chilblains, and become languid and depressed.

3. On the formation of heat.

Repeated exercise also enables the muscles and the nervous structures connected with them to acquire greater power of combination, for the performance of complex movements. It is a matter of common knowledge that on attempting any complicated exercise there is a large expenditure of unnecessary exertion and effort, which quickly leads to fatigue. By practice, however, we come to learn not only what muscles to use, but how to use them with the greatest advantage and economy, in order to produce the desired result. The varied muscular actions necessary for the movement become at last so firmly associated together, and so completely controlled by the brain-centres which preside over the movement as a whole, that when once started, it proceeds through all its stages with so much facility and with so slight an intervention of the will, that it becomes for all practical purposes automatic. Economy in the exercise of power is one of the most important objects of education, and its attainment primarily depends upon the establishment of well-constructed and well-distributed nervo-muscular combinations, under the influence of habitual exercise.

4. Promotion of greater power of combining movements.

5. Secondary automatism.

From these considerations it will at once be seen that as new movements (new combinations, that is to say, of elementary muscular actions) are acquired under the influence of practice, progressive changes simultaneously occur in the nervous system, as a result of which, new centres or groups of nerve-cells are gradually brought into existence, to preside over and control the

Relation of exercise on growth of brain.

movement in question. In other words, that part of the brain which is concerned with the production of voluntary movements, and with the reception of sensory impressions derived from the muscles which are called into play, becomes elaborated and specialised. That which was simple has now become complex; that which was indefinite has now become definite; and that which was general has now become special. The interests of all parts of the brain, moreover, hang together so closely that the welfare and advancement of any one part necessarily favour the welfare and advancement of every other part; and thus the beneficial effects of exercise upon the brain extend in a greater or less degree to the *whole* brain, and favour the development of *all* its functions. But this is not all. Thought or feeling can only become operative and effective by expressing itself in *action*; and thus the careful cultivation of *action* is not only the most desirable, but the most natural, preparation for culture of all kinds—mental or moral.

Effect of exercise on the general circulation.

With regard to the general effects of exercise upon the body, the first that demand notice are the greatly increased activity of circulation and breathing. The action of the heart increases in force and frequency, to the extent of from 10 to 30 beats a minute, and all parts of the body are better supplied with blood. Since the activity of a part—other things being equal—depends on the blood-supply, the nutrition of the body as a whole is improved, and the functions of all its parts are promoted. It should be remembered that the blood not only brings nourishment to a part, but is the vehicle by which all waste matters are carried off to the skin and kidneys through which they are discharged from the body. Since exercise not only increases the activity of the circulation, but specially excites the activity of the skin and kidneys, it will at once be seen how potent an influence exercise has in keeping the blood pure. A great many minor ailments are met with which depend upon impure blood—blood, that is to say, which has not been properly cleared of waste products, and such ailments may often be cured or

together prevented by regular exercise. It may be further mentioned, by the way, that exercise very much helps the action of the bowels, and thus prevents or relieves constipation.

The activity of breathing processes is also greatly increased by exercise. In the first place the frequency of the breathing act is greater. For instance a healthy adult breathing about 18 times a minute, when standing still, will breathe 25 times a minute when walking quickly, and about 36 times a minute when running. Secondly, the breathing is deeper. If we estimate the amount of air taken in at a single breath when lying down as 1, it increases to 1.3 on standing up; and to 5 or 6 on walking four miles an hour. Thirdly, the amount of oxygen given up to the body, and the amount of carbonic acid returned are also greatly increased, corresponding to the greater activity of the combustion processes which take place in the muscles which are exerted.

Effect of exercise upon breathing.

As may be supposed, this increased heart action and breathing power are not without their beneficial influence upon general nutrition, growth, and development. Those who are fat to excess, lose it; while the thin and spare become better nourished, and gain weight. Fat serves the part of fuel for combustion; but it forms no necessary part of the substance of the body in any large quantity, and represents merely the storing up of nutriment which is not or cannot be made use of at the time it is taken. Exercise increases the combustion processes of the body, and thus any fat stored by is used up, and the loss of fat not only lessens the weight of the body and the amount of energy which is necessary to move it from place to place, but the muscles act better and with greater facility without it than with it. On the other hand, the spare scraggy man does not make complete and effective use of the food he takes, and with exercise he eats better, he digests better, is better nourished, and therefore gains in weight. For similar reasons, growth is quickened by exercise, and the circumference of the chest becomes notably increased. The whole development of the

Effect of exercise upon general nutrition.

body is rendered more regular, and acquires a symmetry; grace, and beauty which sharply distinguish those who have been physically well trained, from those whose physical education has been neglected, and whose occupations are too sedentary and confined.

Moral and  
mental effects  
of exercise.

Very few words are necessary to point out the important moral and mental effects of exercise. Nothing has done more, or can do more, to bring out those qualities of pluck, endurance, self-reliance, self-control, and unselfishness, of which as a nation we are so justly proud, than athletic games and exercises. And all schoolmasters and mistresses endorse the opinion that, provided it is kept within reasonable limits, physical exercise tends to sharpen the wits and improve the mental powers of children. Statistics might easily be given to substantiate these statements, but though often overlooked, their truth is so far recognised, that for our present purpose it is unnecessary.

Over-exertion.  
Fatigue.

Among the effects of over-exertion the first that calls for comment is *fatigue*. The feeling which is summed up in what is called fatigue is a very familiar one; but, as we shall see, it is something more than a mere feeling. It is the complex result of several conditions brought about by over-exertion, of which the feeling of fatigue or tiredness is but the earliest indication. If the arm, for instance, is held out horizontally, before many minutes have elapsed, there is a distinct consciousness that greater effort is required to keep it in position. A little later, the effort becomes so great as to be painful, and the pain is referred mainly (though not exclusively) to the actual muscles engaged. At last the pain is no longer supportable, and the limb falls by degrees helpless to the side. But it must not be supposed that these muscles are entirely exhausted and incapable of further contraction. On the contrary, if an electric current be passed through them, so as to reinforce the nervous energy which impels them to contract, the con-

strained position may be continued for a considerably longer time yet, though a time at last arrives when even with this assistance no further work can be done.

How are these facts to be explained? It is necessary to keep in mind that the apparatus of movement consists of nervous centres, connected with the actual moving parts or muscles by means of nerve-fibres. Each—the nervous centres as well as the muscles—is exposed to the influence of two conditions:—(1) progressive exhaustion of stored-up energy; and (2) a veritable poisoning of the nerve and muscle-elements by the products of their own activity.

Explanation  
of fatigue.

Muscle and nerve-organs, in common with all the other organs of the body, acquire the power, in the ordinary course of nutrition, of doing a certain definite amount of work. In the actual performance of work this store is directly drawn upon, and as a rule is used up faster than it can be replaced. We see then that both nerve-centres and muscular fibres, as soon as they are called into activity for the performance of any movement, begin forthwith to use up their available stores of energy. Now in an ordinary exercise the muscles are not working up to their full power; and it is possible, within certain limits, to make up for commencing exhaustion of individual muscular fibres by a thorough rousing up of the muscle as a whole to a more powerful action. This is accomplished by additional streams of energy being sent down from the nervous centres of the will to reinforce those other nervous centres which more directly preside over muscular action, and which have already begun to fail for the same reason that the muscles themselves are failing. The arrival of the process of fatigue at this point is marked by the conscious demand of effort, and the further consciousness of pain. Painful impressions not only result from the direct effect of mechanical violence exerted upon the sensitive nerve-endings in the muscles, but further painful impressions are aroused by the struggle on the part of the nerve-centres to maintain the movement in question. The occurrence of pain has in itself a

Exhaustion of  
stored-up  
energy.

paralysing influence upon the will, and soon reaches a point which makes a continuance of effort so difficult as to be intolerable. And this occurs a considerable time before the contractile energy of the muscles becomes actually exhausted.

Limits of ordinary or "subjective" fatigue.

Ordinary fatigue does not pass beyond this stage, which is characterised by a nervous rather than by a muscular difficulty, and may be briefly described as the consciousness of painful effort. All work which is done after this feeling of painful effort has once begun is carried on at the risk of some damage to health and well-being. The *feeling* of fatigue is, in fact, a danger-signal, a warning that enough exercise has been taken, and that it should now cease.

Varied susceptibility to fatigue.

The susceptibility to fatigue varies greatly in different persons according to circumstances. As a result of faulty nutrition from insufficient food, or in the case of a youth whose energies are largely used up to supply the demands of rapid growth, or as a result of the nervous excitability and disturbance which characterise certain periods of special development, as at puberty—under each and all of these conditions the amount of nervo-muscular reserve power is reduced, and fatigue occurs more quickly. Again, difficult exercises, which need a considerable amount of attention and control on the part of the will for their proper performance, cause fatigue earlier and in much greater degree than exercises which are simple, easily learnt, and able to be carried out with very little intervention of the will. A rhythmical exercise for the same reason is less fatiguing than one which is irregular; and since music tends to bring out and emphasise the rhythm of exercise, it serves a very useful purpose in reducing the fatiguing effects of all exercise to which it can be adapted.

Extreme or "absolute" fatigue.

So far, then, ordinary nervous fatigue has alone been considered. Under the influence of strong excitement, anxiety, fear, or even of a strong determination of the will, fatigue can be carried beyond the ordinary limit, and enters upon a stage which is a good deal more serious, as we shall see.

Wherever any bodily work is being done, whether nervous,

muscular, or of any other kind, chemical changes take place in the parts concerned, which are attended with the formation of waste products, analogous to those which are formed by the combustion of coal or wood. Now some of those waste-products of the body are very poisonous, and in order that health should be maintained they must be got rid of as soon as possible. The chief channels by which they are discharged are the lungs (in breathing), and the kidneys (in the urine). We all know how poisonous air becomes which has been breathed over and over again. The urine, too, is more or less poisonous. Both are poisonous for the reason that they are bringing off poisonous products of wear-and-tear from the system.

Muscular and nervous waste products.

It must be understood, then, that these poisonous products are being steadily formed in the nervous centres and muscles concerned in the performance of any exercise from the moment it is first begun. When, however, the exercise is moderate and not too long continued, the blood-stream suffices to carry away these dangerous substances to the lungs, kidneys, and skin, where they are got rid of almost as fast as they are formed, and no ill results occur. But when exertion is very severe and long continued, as might occur, for instance, in a man who is fleeing for his life, poisonous products are formed much faster than they can be got rid of, and they accumulate in the system. The effect on the muscles is to destroy their power of further contraction, and the man at last falls helpless and dead-beat. The nervous system is profoundly deranged, the breathing and the action of the heart become acutely embarrassed, and if sudden death does not happen, a condition of general fever (*fatigue fever*) is induced, attended with serious illness and prostration, from which it may take long to recover.

Poisonous effects of waste products.

Such cases of acute *absolute* fatigue (as distinguished from ordinary *subjective* fatigue) are fortunately rare, but cases are by no means uncommon in which the disturbance is less acute, the course less rapid, and the termination less often fatal, where the dose of poison is less in amount, but frequently repeated. Such



results occur in persons daily engaged in fatiguing work, too long sustained, and not relieved by sufficient periods of rest and sleep. Under these circumstances the poisonous products of one day's work are not completely got rid of before the next day's work begins, and so a gradual accumulation takes place till a point is reached when his health becomes obscurely undermined, and he becomes liable to grave complaints from trivial causes, ordinarily insufficient to lead to serious consequences.

Chronic exhaustion as a cause of fatigue.

But there is another form of chronic exhaustion and fatigue which results not from poisoning of the system, but from an over consumption of material and tissue necessary for healthy life. It is particularly common in those who are engaged in moderate exertion for too many hours daily, as with an overworked athletic or gymnastic instructor. His waste-products are not so abundant, but they can be readily got rid of; but his fault lies in not allowing sufficiently long intervals of repose in which to make good the loss of tissue from ordinary wear and tear. As may be supposed, these results are much more likely to follow if at the same time the person is insufficiently or improperly fed, or suffers from indigestion, which prevents his making full use of the food he takes. He may feel no fatigue in the ordinary sense of the term, but steadily becomes weaker and loses flesh. This condition, if not checked by appropriate rest and nourishment, brings a whole host of troubles in its train, and, moreover, is a most powerful favouring cause of illness from other sources. An important distinction between fatigue from blood-poisoning and fatigue from progressive exhaustion lies in the fact that while the latter is readily cured by rest and food, such remedies have no power to check the former. Fatigue from exhaustion is common enough among the ill-fed children of the very poor in our elementary schools, and great caution should be exercised by teachers in allowing such children to take part in physical exercise. It may be laid down as a safe rule that no child should be allowed to take part in these exercises who is steadily losing weight, in however slight a degree.

It is often asserted that muscular exercise is an antidote to mental overwork. This is certainly not the case. Exercise can and does neutralise and overcome the effects of an occupation which is too sedentary and confined, but it entirely fails to remove the effects of mental overwork unless, at the same time, the amount of mental work is reduced. The conditions are much the same for the brain which thinks and the muscles which move. They both determine an increased flow of blood to the parts engaged in work; both involve increased liberation of heat in the body; both result in a loss by wear-and-tear of the living material of the body, and both lead to the formation and accumulation of poisonous substances which, unless they are soon removed from the body, will embarrass and disturb its functions. Moreover, as we have seen, in all bodily movements determined by the will, the brain is called into action, and when exercises are difficult and prolonged, the brain will become fatigued. If the muscles are already weak this result is still more likely to occur, because they require a stronger nervous stimulus to compel their action. It is therefore clear that much discrimination and good judgment are necessary in the selection of exercises for those whose brains are being taxed to their full capacity by mental work.

Muscular exercise no antidote to mental overwork.

Another result of over-work is *breathlessness*. Recall your experience of some violent exertion, as, for instance, in running to catch a train against time. In a few minutes a strange sense of oppression is felt at the chest, the breathing becomes irregular and difficult, the heart beats violently, the head throbs, the complexion becomes dusky, and a general sense of anxiety supervenes. These troubles increase with the continuance of exertion, and though there is no feeling of fatigue in the legs or elsewhere, further exertion at last becomes impossible because of a feeling of impending suffocation and severe palpitation of the heart, and in this condition, a man is said to be "blown," or to have "lost his wind." Even when such exertion has ceased, the difficulty

Breathlessness.

continues for a time, and only passes off gradually. What is the explanation of it?

Conditions  
under which  
breathlessness  
occurs.

In the first place it is a matter of common knowledge that some exercises induce breathlessness much more readily than others. Thus we more easily get out of breath with running than with walking; with boxing or fencing than with dumb-bell exercises or Indian clubs; in going uphill than downhill; and more when carrying heavy weights than when unencumbered. If we have to stop an ordinary exercise it is because of fatigue, and not because we are out of breath. Breathlessness does not depend merely upon the amount of work done, for we may be able to walk twenty miles without any difficulty of breathing, while a run of a few hundred yards produces extreme breathlessness. Neither is it the result of mere speed or swiftness of movement. A horse, for instance, may be made to gallop slower than another horse which is trotting, and yet it will be found that the galloping horse gets "winded" sooner than that which is trotting. On observing more closely those exercises which produce breathlessness, we shall find that they all agree in demanding a large amount of work in a short time; in other words breathlessness results from a disproportion in the amount of work which is done and the time allowed for doing it.

No necessary  
interference  
with supply of  
air.

In breathlessness there is no necessary interference with drawing air into the chest (in the act of inspiration), but there is a uniform difficulty in expelling air from the chest (in the act of expiration). At the same time, anything which interferes with free inspiration favours the occurrence of breathlessness. One of the most characteristic features of muscular effort is the temporary fixing of the chest and the stoppage or holding of the breath while the effort is being made; and it is precisely those exercises requiring repeated strong effort for their performance, which—other things being equal—favour the occurrence of breathlessness. Again, any impediment to the free movement of the chest-walls, such as by tight clothing, greatly favours its occurrence. It may then be laid down as an invariable rule

that everything which hinders, either directly or indirectly, the free supply of fresh air to the lungs favours the occurrence of breathlessness.

Why should the compression of heavy work within the limits of a short time produce this air-hunger which is the characteristic feature of breathlessness? As already pointed out, wherever muscular work is going on, oxygen is consumed, and carbonic acid gas is given off. The rate at which this process takes place depends upon, and is in direct proportion to, the amount of work done. The heavier and more arduous the exertion, the more oxygen is used up, and the more carbonic acid gas is given off. It is the business of the lungs in the act of breathing to take in the former, and to carry off the latter. When work is spread over a considerable time, the lungs easily accomplish this task; but when the work is compressed within a very short space of time, there is apt to be a deficiency of oxygen and an excess of carbonic acid in the blood. Now, the action of the heart and the movements of breathing are under the control of nervous centres in a certain part of the brain, which are close to one another; and their proper action depends upon a free supply of pure blood to them. When the blood contains a deficiency of oxygen their action becomes disordered. Thus the breathing becomes irregular, and the heart becomes unable to pump the blood through the vessels of the lung. For these reasons a process of gradual suffocation sets in, and hence breathlessness. What takes place, then, in a person breathless with exercise is exactly similar to what would occur if the mouth and nose were covered over, and no air could get to the lungs, except that it does not develop so rapidly.

Reasons why certain kinds of work cause breathlessness.

Of course every one, however strong and well-trained he may be, is liable to breathlessness under certain circumstances; but it is a familiar fact that some persons get breathless much more readily than others, and that those who are in what is called "good training condition" are able to resist breathlessness much longer and under much more severe conditions of work than

How to resist premature breathlessness.

those who are not in training. Again, it is an equally common experience that provided the exertion is not too violent, a person gradually overcomes his first breathlessness even though the exercise be continued; and he is said, under these circumstances, to have got his "second wind." The explanation of these facts lies in the knowledge, acquired by practice, of the amount of exercise that can be indulged in without unduly taxing the breathing-powers, and the careful adjustment of the depth and frequency of breathing to the needs of the occasion. A well-trained athlete has learnt how to manage his breathing easily for all but the most violent exertion; and one who is less well-trained (if he is careful not to force the pace too much at first) gradually finds out how to breathe to the greatest advantage, in the act of attaining of his second wind. It follows, therefore, that in order to prevent getting out of breath, we must be careful not to attempt hard exercise till we have learnt to breathe with sufficient fulness for that which is less hard. Moreover, we can now readily see, why it is so important that nothing should be allowed in the way of tight or heavy clothing to interfere with the freedom of breathing. Lastly, an exercise which causes great breathlessness at first may, when the exercise is thoroughly acquired, cause no breathlessness at all. The reason is that, being at first ignorant of exactly what muscles to use, and of the exact way to use them to the best advantage, a great deal of unnecessary exertion is taken, in association with an amount of effort which is entirely superfluous, as soon as the exercise becomes more or less automatically performed. Teachers should bear these facts in mind, and refrain from pressing too much new work upon their pupils. They should also refrain from calling upon children to engage in active exercise, unless there is free access of fresh air, and unless their clothing is light and suitable. Children (and especially girls) with pale bloodless complexions, it should be remembered, are particularly liable to breathlessness on slight exertion, because under these circumstances the blood is not able to carry its full proportion of oxygen to the muscles.

Hints to  
teachers.

Another common result of over-exertion is muscular stiffness. Stiffness only occurs in those who are out of condition, or in those who have not done any muscular work for some time, or in those who are out of practice in an exercise which they formerly were able to do with ease and comfort. It never occurs under contrary conditions. It is something quite special in kind. A man in good training, or in daily practice for muscular exercise, may become tired, or breathless, but he never becomes stiff. Stiffness, then, is obviously related to some condition of muscular tissue which is different from that met with in those accustomed to exercise.

Stiffness.  
Conditions  
under which it  
occurs.

We meet with different degrees of stiffness. In the mildest form, it is confined exclusively to the actual muscles engaged, and for some days afterwards, movements requiring the use of these muscles are awkward and difficult, and are accompanied with some local tenderness over them. In the next degree, when the exertion has been more severe and prolonged, there are, in addition, signs of more or less general disturbance of the system. Thus there may be a general feeling of languor and disinclination for work of any kind, together with a sense of depression and restlessness at night. Lastly, in the most severe form, the system is still more upset. Sleep at night is broken and disturbed by unpleasant dreams; the skin is apt to break out in irregular perspiration; the appetite is lost; and there is more or less feverishness. In about twenty-four hours the worse symptoms usually pass off, but complete recovery may be delayed for several days.

Different  
degrees of  
stiffness.

The precise cause of stiffness is a little obscure, but it is something of this sort. The local pain and tenderness of the muscles are probably due to actual damage of a mechanical nature produced by violent contraction of weakened muscular fibres. Exactly the same result may be produced by violent kneading or manipulation of the muscles, quite independently of any active movement. The general disturbance of the system, on the other hand, probably depends upon the formation of

Causes of  
stiffness.

certain substances in the muscles produced in the course of their work, which on being absorbed into the blood, give rise to a temporary blood-poisoning. What the exact nature of these substances is, we cannot say; but at any rate they must differ from those ordinarily produced in muscle in good condition.

Rest. The question of rest or repose in relation to physical exercise is one which cannot be passed over in silence, owing to its great practical importance. A steam engine when at work not only uses up fuel in the shape of coal, but at the same time its substance also undergoes progressive damage from wear and tear. So far, there is a close resemblance in the behaviour of the tissues and organs of the living body, for they, too, when at work, use up the nutriment which is brought to them by the blood, and suffer some actual loss of substance as well. But at this point the resemblance ceases; for while the worn out parts of an engine must be entirely replaced by new ones, the tissues and organs of the body possess the power of self-restoration.

Rest needful  
for repair.

This process of restoration in nerve and muscle after exercise is by no means simple. In the first place there is the need for repair arising from actual loss of nervous and muscular substance, which is caused by the performance of work. The new tissue is built up again, particle by particle, from materials supplied by the blood; and it is obviously a process which occupies considerable time for its accomplishment. Now there are good reasons for believing that repair is greatly hindered, if not prevented, while the parts in question are actually engaged in doing work. In other words, rest is necessary for repair; and its duration must be in proportion to the amount of repair needed, and consequently to the amount of work done.

Necessary for  
removal of  
waste  
products.

But restoration means something more than mere repair. It includes the removal of deleterious waste-products from the nervous centres and muscles engaged, the formation of which (as we have already seen) is a constant result of muscular

exertion. These are carried off by the blood, as it streams through the vessels with which nervous and muscular tissues are so abundantly supplied. It is clear, however, that it cannot be completed while work is actually in progress, and thus we have a further reason for rest. An excess of carbonic acid in the blood very quickly occurs in all exercises which cause breathlessness; and this, as we know, is always accompanied by a corresponding deficiency of oxygen. On the other hand, a very few minutes of undisturbed breathing suffice as a rule to get rid of the former, and to get a fresh supply of the latter. Therefore in all exercises which cause breathlessness, frequent rests of short duration should be given. The waste-matters produced in long-continued exercises which are not hurried accumulate much more slowly, and require a much longer time for their complete removal. Under these circumstances, therefore, rest need not be given so frequently, but must be more prolonged.

Repose also ministers to the work of restoration, by giving time to the muscles to recover their reserve store of energy, by some means quite apart from repair of loss of tissue-substance or the removal of waste products, which are very imperfectly understood. Lastly, in so far as muscular action is hindered by painful sensations in the muscles themselves, rest will bring relief.

Necessary for renewal of reserve force, and relief from muscular pains.

Rest like exercise has its various degrees, and as exercise has to be carefully graded according to the capacity of the pupil—beginning with what is easy and moderate, and passing later to what is more difficult and exacting—so in like manner rest must be graded, not only in respect of more frequent and longer intervals of rest to begin with, but also of the degree of rest. Thus, a scholar in good practice and condition might be rested sufficiently by being allowed to stand still for a few minutes; another, less fit, might require to sit down; while, for a third, a night's sleep might be desirable before exercise is again undertaken. It is impossible to lay down exact

Degrees of rest. Practical considerations.



rules in this matter, and thus it must be left to the discretion of the teacher. But let it be clearly understood that whatever value belongs to physical exercise, can only be secured in connection with adequate rest; and no teacher of physical exercises is worthy of his trust who does not keep this pressing need for due repose ever before his mind.

Factors in  
choice of  
exercises.

In judging of the suitability of this or that exercise for the purposes of physical education, several facts have to be taken into consideration, some of which concern the scholar, while others concern the nature of the exercise itself.

With refer-  
ence to per-  
sonal condi-  
tion of the  
scholar.

Among the facts relating to the scholar, the first which demands attention has reference to his bodily health and condition. It is so obvious that children who are the subjects of disease, who are badly or underfed, who are improperly clothed, or who do not get enough sleep, are unfit for physical exercise, that it is scarcely necessary to do more than mention the fact. One practical difficulty, however, arises, in ascertaining the beginnings of trouble sufficiently early to prevent serious mischief; and another lies in the fact that, in day schools, the children are for a large part of their time out of the sight of and beyond the control of their teachers. When a teacher notes something wrong with a child, he is too apt to think that it is the fault of home management; while parents at once jump to the conclusion that the child is being overtaxed at school. There may be faults on both sides; and, in our opinion, there will be no chance of properly meeting these difficulties until every school (especially the large public elementary schools) is brought under regular medical supervision, as a matter of routine. Every educational authority should have one or more medical officials on its staff, for the purpose of systematically watching over the physical interests of the children in their schools. No doubt it is true to some extent, that special experience in school-hygiene would not at first be always available, but the supply

would eventually come with the demand for such work, and a body of experts would gradually be created which would render invaluable service to the cause of rational education—exactly analogous to what has occurred in connection with Public Health. While we are waiting for a new departure of this kind, it behoves all teachers to keep a watchful eye upon the physical behaviour of the children in their charge, to note attentively the first indications of undue languor and lassitude, undue sensitiveness to cold, frequent headaches, disposition to nervous twitching and grimaces, abnormal backwardness of mental or physical development, and at once to exempt such children from taking part in physical exercises, until the matter has been carefully inquired into.

Within the limits of school age—that is to say, up to 14 years—no practical difference need be made in the exercises for boys and girls respectively. Up to the period of puberty at any rate girls are as strong as boys, and take the same pleasure in active muscular exertion, and it is right and natural that it should be so. After this age boys as a rule require greater scope for their rapidly increasing physical energy than girls, to say nothing of the restrictions imposed upon the latter by reason of their dress, and functions peculiar to their sex. Yet we must not err, as too frequently happens, in supposing that girls during their adolescence are any the better for being “coddled.” On the contrary, plenty of active muscular exertion is good for them in every way, provided they are not too much specialised. The grace and beauty of form which it is so important to cultivate can only be secured by those exercises in which the work is thoroughly and harmoniously distributed over all the muscles of the body.

With reference to sex.

Neither, for the purposes of school-exercises, need much be said about differences on account of age, beyond insisting upon the importance of simplicity, and consequently ease of acquirement, in selecting exercises for those of tender years. For all children under 14, and especially for the younger ones, the

With reference to age.

more that the element of *play* can be introduced into them the better. No pains should be spared to make their exercises as bright and cheerful as possible, and it is partly for this reason that the association of music with their exercises will be found so useful. A word of warning is also necessary against the employment of any exercises with *fixed* gymnastic apparatus for young children. Indeed, for infants, no apparatus of any kind is either necessary or desirable. It is quite sufficient for their little limbs to deal only with their own weight, as in marching, running, and free exercises. It is a remarkable fact that the muscles scarcely show any capacity for development under 14 years old, and exercises on horizontal and parallel bars and trapeze, which bring very considerable strain to bear upon the relatively feeble arm-muscles, are likely to do much more harm than good. Lastly, bearing in mind the extent to which the brains and nervous system in general of children are taxed by their ordinary school-work, it is of the highest importance that their exercises should be selected with a view to make as little demand upon brain-power as possible, giving preference therefore to those which are easy, rhythmical, and which readily become semi-automatic. Remembering that leg-movements are developed earlier than arm-movements, exercises engaging the former should take precedence of those engaging the latter.

With reference to the amount, nature, and mechanism of the exercise. Amount of work actually performed.

In order to judge of the value of any exercise for the purpose of physical training, there are three points to be considered, namely, the quantity of work done, its general character, and the parts of the body which are influenced or brought into play.

Of these the actual amount of work is the most important, for reasons which will presently appear. All work implies the expenditure of energy, and a large amount of work therefore means a large expenditure of energy. Work is technically measured by the amount of energy required to lift a certain number of units of weight through a single unit of space. For example, if a man weighing 10 stone, or 140 lbs., hangs by his hands from a horizontal bar, and lifts his body one foot from the

ground, he performs an amount of work which would be expressed as 140 foot-pounds; or, in other words, he expends an amount of energy able to raise 140 lbs. to a height of one foot, or one pound to a height of 140 feet. He would perform exactly the same amount of work in stepping from the ground on to a step which was one foot in height; and in going up a staircase or a ladder consisting of twenty such steps he would perform work of  $140 \times 20$ , or 2800 foot-pounds. Of course, in actual school practice, accurate calculations of this kind are out of the question, and reference is made to them here only for the purpose of clearly showing what is meant by "amount of work." But, apart from this, it is by no means easy to estimate, even in general terms, the amount of work involved by any particular exercise.

At first sight it would appear that a man hanging by one hand from a horizontal bar, and raising his body one foot from the ground, say five times in succession, was doing a great deal more work than if he walked up a staircase of twenty steps, each one foot in height; whereas, in fact, he would be doing only one quarter as much work. The effort required for the former merely consists in his concentrating upon a few relatively weak muscles the work which in the latter is distributed over a large number of relatively strong muscles. Or again, what appears to be a difficult exercise requiring very great exertion may often be, after all, more a matter of trick than anything else, at any rate after it has once been mastered, requiring in reality no considerable exertion. •

Effort and difficulty are no safe guide to amount of work.

In judging, then, of the amount of work, we have to rely on other considerations than those of visible effort and apparent difficulty. To a large extent we may be guided by a rough estimate of the *number* of muscles brought into play; for, other things being equal, the more numerous the muscles which are engaged, the more work is being done. Such an estimate may be made by observation of the share taken in the exercise by the various limbs, by the demand for special steadiness and fixity

How to estimate the amount of work.

of the trunk of the body, by difficulty in maintaining balance, and by one's own personal sensations while performing the exercises. Further help is obtained by noting the distribution of fatigue; and lastly by noting early breathlessness, especially when it occurs apart from any holding of the breath, or mechanical hindrance to free breathing.

General in  
vigation of  
body related  
especially to  
amount of  
work

As already pointed out, one of the principal advantages to be derived from school exercises is general invigoration of the body, accompanied with increased activity of all processes of nutrition, and these results depend in turn upon increased activity of breathing and circulation of the blood. Such results are related in a larger degree to the actual amount of work done than to any other factor of physical exercise. In other words, in proportion to the work done (so long as it conforms to suitable conditions), the more actively we breathe, the more energetically does the heart contract, the better does the blood circulate, the more rapidly does nutrition take place, and the more completely are waste products removed. On these facts depend the preference which should be given to exercises for school purposes involving a reasonably large amount of work.

Necessary  
conditions in  
reference to  
amount of  
work.

What are the "suitable conditions" just referred to? (a) The amount of work *must always fall short of producing fatigue*, and therefore all work should be moderate to begin with, to be afterwards gradually increased in amount as the scholar becomes accustomed to it. (b) *The work should be well distributed over the body.* It is quite obvious that by this means a much larger amount of work can be done without fatigue than when it is concentrated upon a small part of the body, especially where—as in the case of the arm—the muscles are relatively feeble. For this reason, too, exercises should be frequently changed, so as to bring the various parts of the body successively into play. (c) Since fatigue is largely proportionate to the amount of care and attention required in the performance of an exercise, those exercises which make the least demand upon the scholar in this respect will admit of a larger amount of work being done than

under opposite conditions. (*d*) Since effort compels the fixation of the chest, and temporary stoppage of breathing, breathlessness soon occurs, and work has to be curtailed in consequence. *Effort, therefore, must be avoided.* (*e*) It is manifestly injurious to demand much—if any—work from a child who is physically unsound, or who is insufficiently fed.

The general character of any given exercise is scarcely inferior in importance to that of the actual amount of work done. Exercises vary in quality according to the strength, endurance, skill, and speed required for their performance. Exercises which need great strength cause considerable fatigue; while owing to the large amount of energy called into play, and the rapidity with which exhaustion supervenes, it is difficult to grade and control them properly. Moreover, exercises of strength are inseparable from effort and strain, as a result of which the chest is fixed, the breath is held, and the circulation of the blood is obstructed. The muscles of children are relatively weak, fatigue is badly borne, and even temporary obstruction of the circulation is especially liable to over-distend the heart. For these reasons exercises of strength are unsuitable for physical education in schools.

General character of the exercise.

Exercises of strength.

Exercises of endurance are those in which moderate exertion is carried on for a long time, the total amount of work being in proportion to the time for which it is continued. They involve no strain upon the breathing, or upon the action of the heart: but their characteristic feature consists in the steady formation of deleterious products of wear and tear, over considerable time, unbroken by periods of repose. A long walk may be taken as a type of this kind of exercise. Now children are especially susceptible to poisons of any kind, serious disturbance being set up by smaller doses than with adults. Moreover, the nervous system of children is always prejudicially affected by long-continued outpouring of energy in any form, and they require frequent intervals of rest in order to make their losses good. For these reasons, exercises of endurance are unsuitable for children either for school training or otherwise.

Exercises of endurance.

## Exercises of skill

Exercises of skill are also unsuitable, on account of the demand which they make upon the brain, in the way of necessary care and attention to the details of their performance, and to the *relative difficulty in their acquisition.*

## Exercises of speed.

The essential character of exercises of speed is the multiplication of muscular movements, quickly succeeding each other. *A large amount of work can be done in a short time by a rapid series of easy movements.* Exercises of speed and strength are alike then in producing a large amount of work in a short time, but they have this important difference, that, whereas in exercises of strength large masses of muscle are made to contract continuously with all the force they have, in exercises of speed individual groups of muscles pass at very short intervals, and for a large number of times from repose into action. Moreover, they both agree in producing breathlessness, but with the important difference that in exercises of strength it is associated with profound fatigue, while in exercises of speed, fatigue comes on much later and more slowly, and is consequently much more easily controlled. Now so long as children are not fatigued, they adapt themselves more readily to the exigencies of forced breathing better than adults; indeed the intense capacity of children for active movement is a matter of common knowledge. For these reasons exercises of speed are *par excellence* eminently suitable for children—such as running, jumping, skipping, and rapid movements of arms and legs generally. In exercises of this kind, we secure abundance of work, we reduce the risks of fatigue to a minimum, we satisfy the natural desire of a child for activity, we supply a healthy excitement to the whole system, and full opportunity is available for repose at short intervals.

## The mechanism of the exercise.

The mechanism of exercise relates to the parts of the body which are brought into play in the course of its execution. It is by no means always easy to say off-hand what the mechanism of any particular exercise really is; because it is quite unusual for any muscular action to be strictly confined to those parts which

are primarily and most obviously engaged. Roughly speaking, the more severe the exertion of any particular part, the more is it supplemented by the action of other muscles, and the wider is the area over which such action is distributed. Thus a simple quiet movement of the arms, for instance, involves very little action beyond the limbs themselves; if, however, a dumb-bell is held in each hand, and the swing of the arms is more active, the muscles of the trunk are called into play for the purpose of giving steadiness to the body; while, if weights be held in the hands which are so heavy as to require very considerable effort to move the arms at all, there is scarcely a muscle in the body from which some degree of work is not exacted.

In special exercises such as gymnastics with fixed apparatus, boxing, fencing, riding, cycling, and the like, this question of mechanism is one which requires careful consideration in order properly to understand their effects. But in the simple setting-up exercises with which we are now concerned, the mechanism is sufficiently obvious and elementary as to need but little comment here. From what has been said, however, it will be gathered that all these setting-up exercises should be frequently changed, starting from those which are simple and confined to certain limbs, or to the trunk of the body, and passing on by degrees to various combinations of these elementary and fundamental movements. During their performance the limbs should be well set, and a good average energy and smartness should be infused into each movement, in order to extract full benefit. More work can be safely demanded from the legs and trunk than from the arms, because of the greater muscular strength of the former as compared with the latter. Above all, a good posture is essential, as a firm basis of support while the movements are in progress, and as a means of obtaining not only steadiness and maintaining a good balance, but as contributing in an important degree to grace and ease of performance.

Any exercise which works any particular set of muscles to the relative exclusion of the rest, or any exercise which involves

Mechanism of more importance in special than general exercises.

Liability of some exercises to produce deformity.



the frequent or prolonged maintenance of an unnatural and ungainly posture, will inevitably produce deformity in course of time. The broad thick muscular shoulders, the rounded back, the large body, and the small legs of the professional gymnast, are examples of the former; while the stooping gait, the forward shoulders, the thin arms, and muscular legs of the cycling "scorcher" supply an illustration of the latter.

Advantages of  
*setting-up* ex-  
ercises.

The exercises which will be described in this work are pre-eminently free from any tendency to produce deformity. In the first place, the work of every limb is in fairly exact proportion to its strength and muscular development, for the simple reason that in the more elementary exercises the limb has only to move its own weight; and it is only after preparatory training of this kind that light weights are permitted to be held in the hands. Also to a large extent it will be found that owing to alternate flexion and extension, up and down motion, or forward and backward motion, being so generally associated, the work is in consequence very evenly distributed, and the exercise of each group of muscles is accompanied with exercise of antagonistic muscles. Neither is there any tendency to draw the body into awkward or unnatural positions; and, owing to the symmetrical grouping of all exercises attended with movement of the vertebral column, there is no danger whatever of any spinal curvature. These in fact are the reasons why simple "ground-exercises" (as they are called) are preferable to all others for the physical training of young persons under puberty.

Effect of exer-  
cise on chest  
development.

Just a few words in conclusion about the effect of exercises which develop the chest. Great importance is rightly attached to a large chest, because (with healthy lungs) it indicates a large breathing capacity, which in itself is not only an excellent preparation for all exercises likely to cause breathlessness, but a powerful preventive against some of the most insidious diseases of the lungs. The value of an exercise as a means of increasing the girth and capacity of the chest depends upon three factors. The first of these is strength on the part of those muscles which

Factors which  
tend to good  
chest develop-  
ment.

move the ribs. These muscles are grouped around the upper part of the trunk, the shoulders, and the root of the neck. Exercises, then, which bring into play and develop the muscles of these parts contribute in no small degree to the development of a good-sized chest, and strong breathing power. A second factor concerns the habitual posture of the body. It is impossible to breathe deeply when the head is flexed on the chest, when the body is stooped, or when the shoulders are drawn forwards—in the bad position, for instance, which is too often assumed by cyclists. It becomes, therefore, a matter of importance to cultivate the habit of standing with the head upright, the back straight, and the shoulders thrown back. Both of the above factors, however, are chiefly concerned in preparing the way—so to speak—for a large breathing capacity, by creating favourable conditions. The third and most important factor after all consists in the habitual practice of exercises which compel deep breathing. Moderate breathlessness causes deep breathing, but when it is excessive the breathing is shallow. All exercises which in an extreme form produce breathlessness are, when less violent and practised judiciously, powerful causes of full chest development. Exercises of strength rapidly lead to an increase in the size of the chest, as instanced by the enormous chest development of wrestlers. But these exercises, for reasons already given, are barred for the young. On the other hand, exactly similar effects can be produced by rapid succession of movements only requiring moderate exertion, which, as we have seen, are especially suitable for children. Thus few exercises act more powerfully in developing the chest than running. The legs can perform three times as much work as the arms, without fatigue; and therefore, other things being equal, leg exercises are preferable to all others as a means of increasing the chest capacity of young persons, especially when conjoined with good development of the muscles used in breathing, and a good posture.



**PART II**  
**PHYSICAL EXERCISES**



# I

## INTRODUCTION

**Position of Teacher.**—The teacher should stand in such a position in front of a class that he can see and be seen by every scholar.

**Commands.**—The smartness and precision of movements depend almost entirely on the teacher's commands, which should be given in a clear, crisp, and distinct tone, and sufficiently loud for every one to hear. Commands should be few in number, and as concise as possible. They should be given in two parts, separated by a pause; the first part, which prepares the children for what has to be done, should be said slowly; the second, which deals with the execution of the movement should be said smartly. The first is called the *cautionary*; the second, the *executory* command.

In most exercises the cautionary command is sufficiently represented by a *number* to indicate the exercise; but for body movements, it is usual to give the *name* of the movement about to be performed.

**Counting.**—Count each stage of the exercise (to 4 or 8 as may be necessary) in clear, distinct, and well accented tones; and do not count *before* the movements, but *with* them.

See that every movement is fully carried out, and that there is a distinct pause between each—in fact, the pause should at least be as long as it takes to make the movement.

In some exercises (as body movements) it is desirable to make a longer pause. In counting for these exercises *two* numbers should be taken for each movement. Thus, make the movement on the 1st, and remain in the same position while the 2nd number is said; then move to the next position on 3, and rest on 4. Count as in 4-time music, accenting 1 and 3, during which the movements are made. Where this form of counting is required, "*double time*" will be mentioned at the beginning of the directions for the exercise; and only odd numbers will be given; while the even numbers, though not written, must be counted aloud by the teacher when conducting the exercise.

Never *begin* an exercise with "*one*," or the movements will follow the counting instead of going with it. While teaching a new exercise the movement, however, must follow the number, but this should never occur in subsequent practice. When the teacher is showing an exercise to the class, he should always work with the arm opposite to that used by the children.

All bent-arm movements commence on the command "*Begin*"; all straight-arm movements, with "*Swing*"; and all body movements, with "*Bend*" or "*Turn*," as the case may be.

Those exercises which do not commence from the position of Attention have a preparatory command such as, "*Ready*," "*Bells to shoulders*," "*Raise*," etc. etc.

If an exercise has 4 movements, give the command "*Change*" on No. 3; and if there are 8 movements, on No. 7.

## II

### DRILL AT ASSEMBLY

THE drill at assembly should always be taken by one teacher, the others being present to help with the discipline of their own classes. An oral command cannot be heard distinctly when the children are running about in the play-ground, so it is better to assemble them by some signal, as a whistle or bell. Blow the whistle or ring the bell twice. At the first signal the children stop play; while at the second they march to the lines as described in the command: "*Fall-in.*"

"**Fall-in.**"—Children arrange themselves in lines in the yard, according to class or standard.

A **Line** is formed when the scholars stand side by side.

A **File** is formed when the scholars stand one behind the other.

"**Attention.**"—At the command "*Attention,*" every child should immediately stand erect, with heels firmly together, toes open, arms straight by the sides, shoulders and hips well back, chest expanded and naturally pressed forward, stomach well in, head erect and turned to the front. The weight of the body should be on the fore-part of the feet (Fig. 1). The position of Attention being very important, it should be frequently and carefully practised.

"**As-you-were.**"—When an order is not properly executed, the children should be brought to their former position by this command.



**"Stand-easy."**—For rest after an exercise, give this command; when, without moving the left foot, the children may stand in any easy position.

*(Before proceeding further every teacher should now walk along the front of his class, and send to the bottom of the line all who have not come to school clean, tidy, and with boots blacked.)*

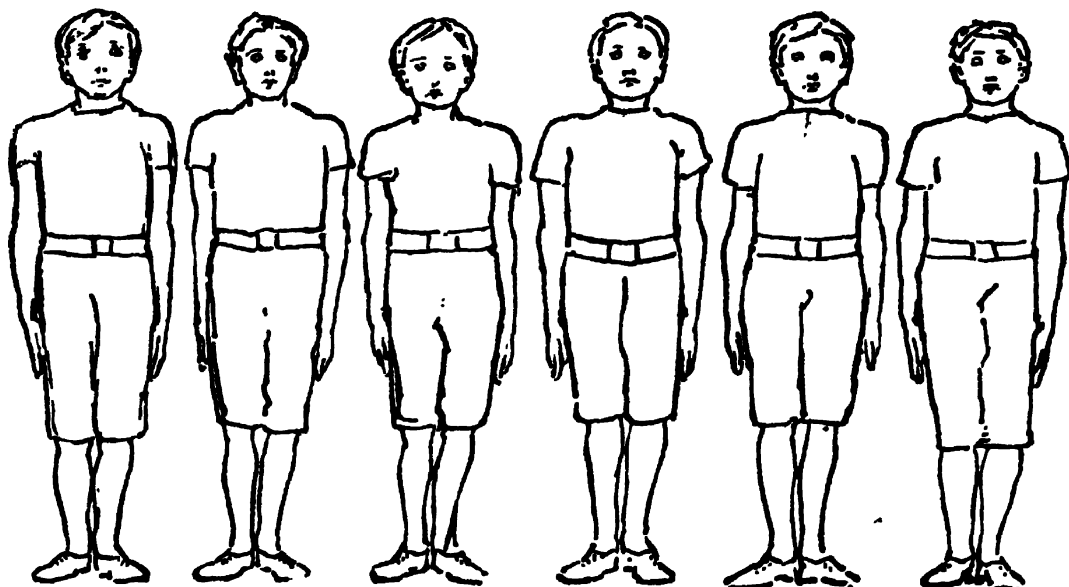


FIG. 1.

**"Eyes right."**—At this command, every child turns the head quickly to the right, and glances along the line, with the exception of No. 1, who should look straight to the front.

**"Dress."**—At this command the teacher or head scholar should take up a position about two yards from the line, and standing at right angles to it, should correct any imperfections. He should then tell those who are not in line, to dress backward or forward, until he can see the chest and the face of every one. He should then give the order: *"Eyes Front."* This is known as *Dressing the line*, and may be done by the left, or right (Fig. 2).

When dressing or standing at Attention look out for scholars

bending forward, throwing heads too far back, or leaning back from the waist.

**"To the Right, one arm's distance, Ex-tend."**—(This supposes the extreme scholar on the left to be stationary.) Every child immediately makes a short step to the right with the right foot, and then brings the left foot to it, heels touching only.

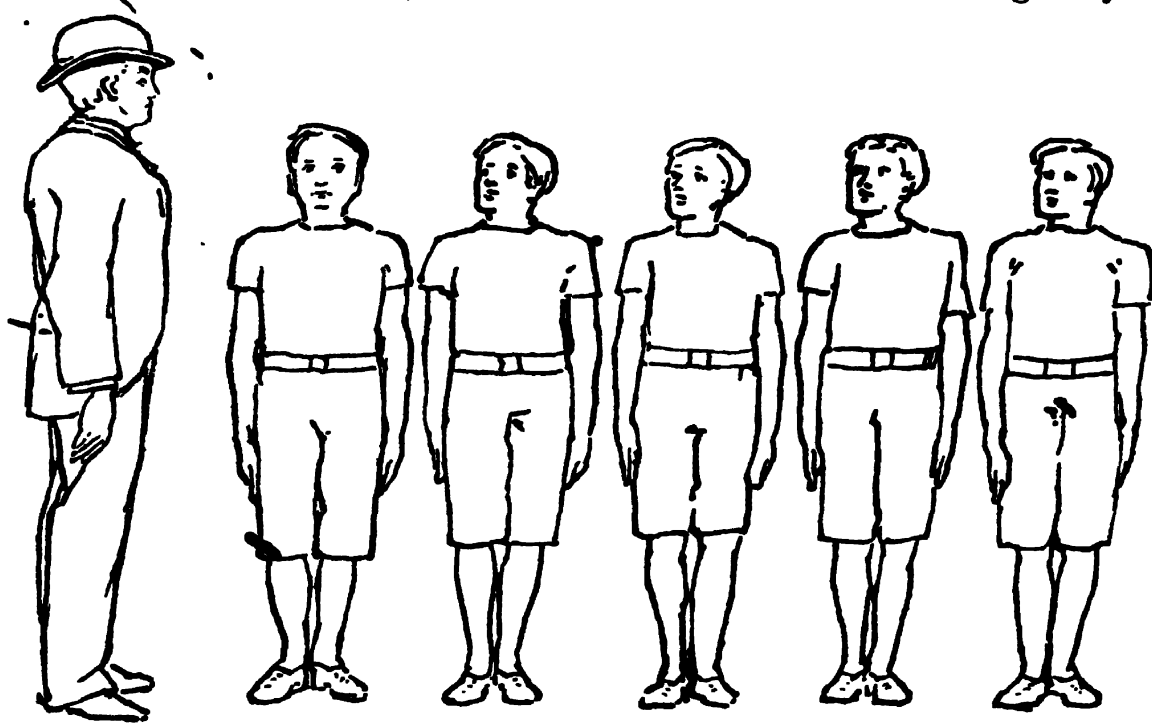


FIG. 2.

Continue in regular steps, at the same time raising the left arm, until all are at one arm's distance from each other, with the finger-tips of the left hand (palms upward) just touching the shoulder of the child next on the right.

*N.B.*—In this position, the indoor exercises can be practised by the whole school and should be done at least once a week.

**Turns.**—(*Right turn; Left turn; Half-right turn; Half-left turn; Right-about turn.*) These should be practised every day. The turns here referred to are the same as those used

RIGHT TURN.

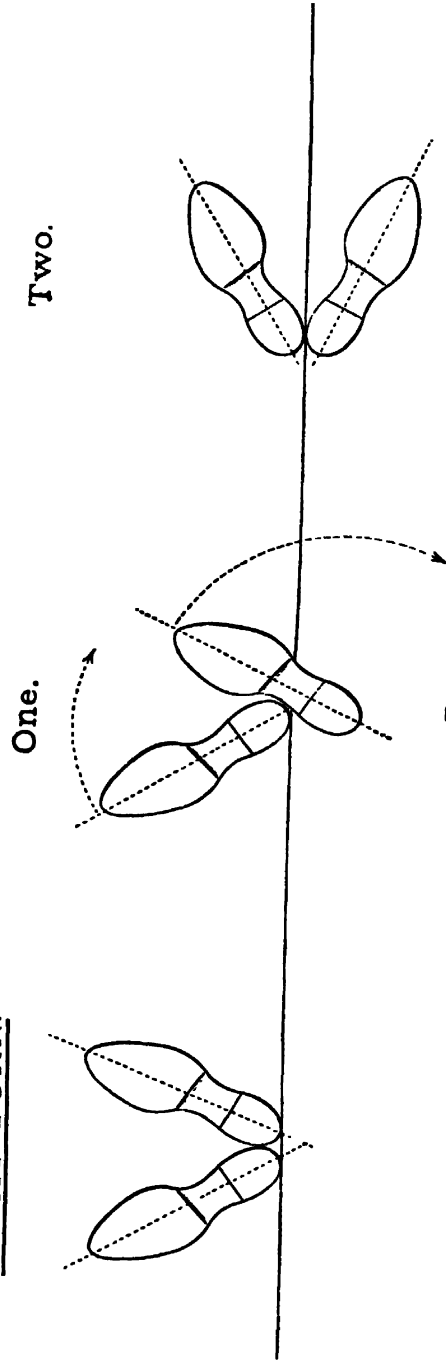


FIG. 3.

LEFT TURN.

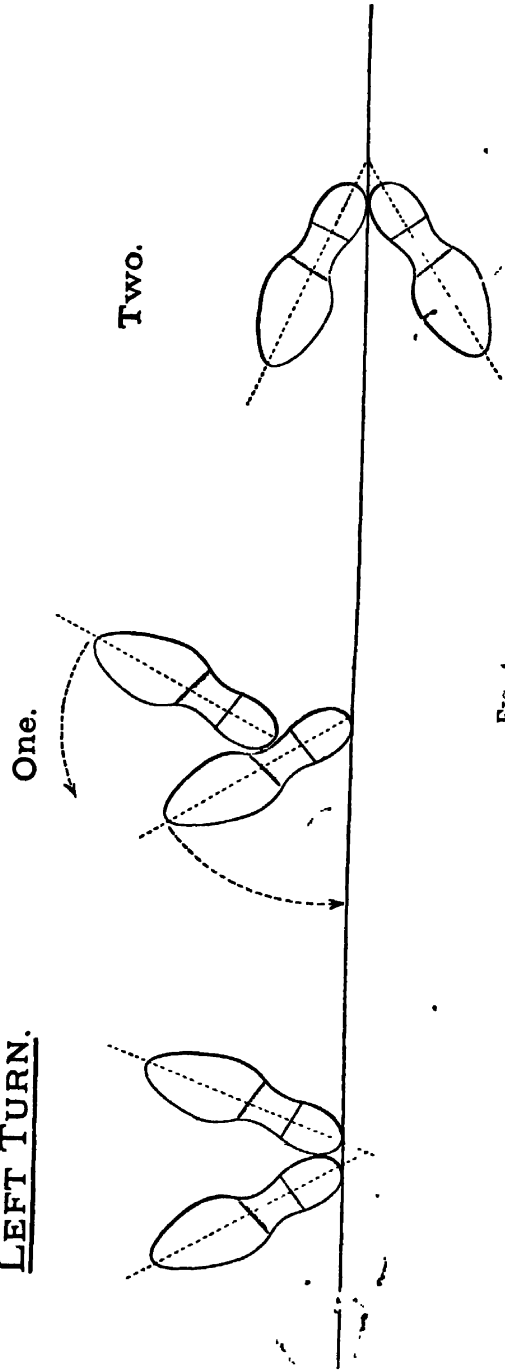


FIG. 4.

in the Army. If properly done, they are smart, effective, and useful foot-exercises, and should be taught as follows:—

**“Right-Turn, by numbers—One—Two.”**—At *One*, draw the right foot back, placing the hollow of it against the heel of the left. At *Two*, raise the toes and turn on the heels smartly to the right, a quarter of a circle. When this has been well learnt, let the command be simply *“Right-Turn.”* On the command *“Turn”* every one should say distinctly and sharply *One*, and after a short pause *Two*, doing the movements at the same time. Afterwards practise the same without counting at all (Fig. 3).

The remaining turns should be taught in a similar way.

**“Left-Turn.”**—At *One*, bring the right foot forward, placing the heel in the hollow of the left. At *Two*, raise the toes and turn on the heels smartly to the left, a quarter of a circle (Fig. 4).

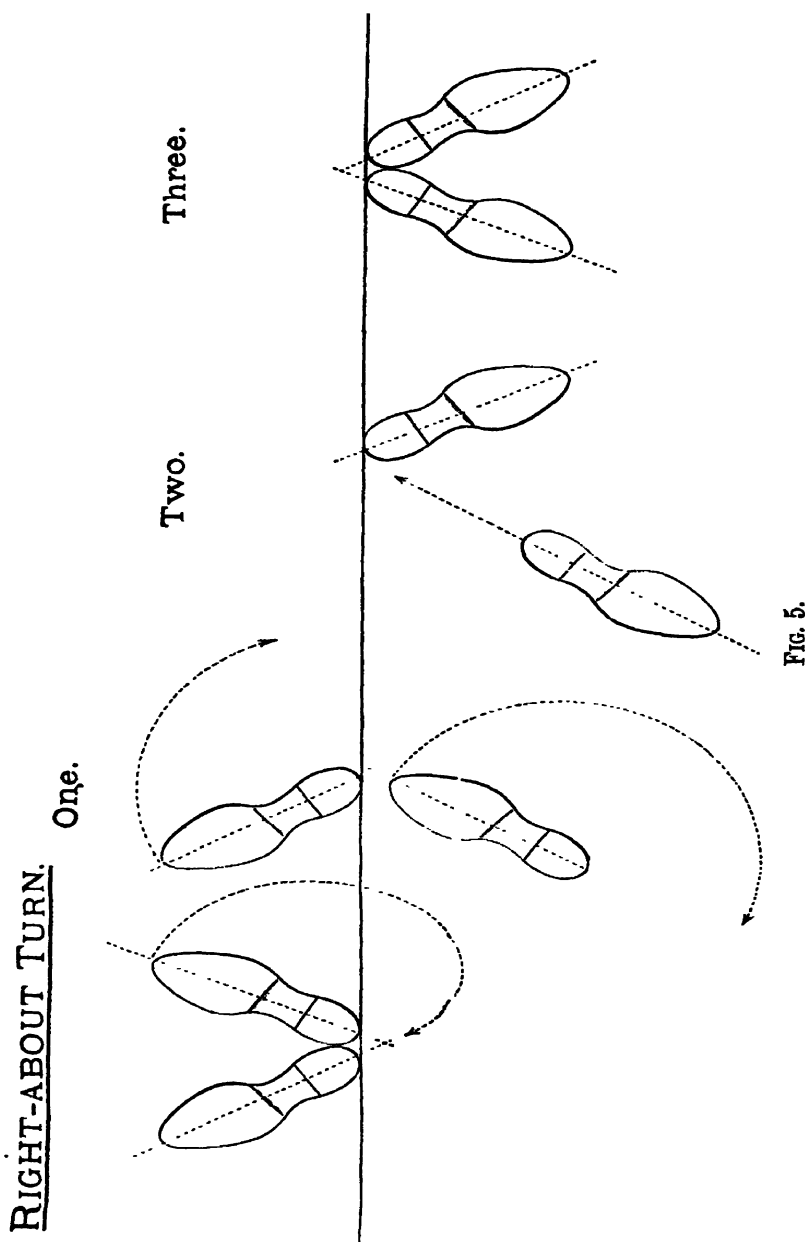
**“Half Right-Turn.”**—At *One*, draw the right foot a little way back; at *Two*, raise the toes, and turn to the right, but only half the distance, viz.  $\frac{1}{8}$  of a circle.

**“Half Left-Turn.”**—At *One*, bring the right foot a little forward; at *Two*, raise the toes and turn to the left— $\frac{1}{8}$  of a circle.

**“Right about-Turn.”**—At *One*, draw the right foot back, until the toes are an inch or so to the rear of the left; at *Two*, raise the toes and turn half-way round toward the right, making half a circle. The right foot is now in advance of the left. At *Three*, bring the right foot smartly to the left (Fig. 5).

When possible these turns should be occasionally practised to music. A march should be played, and the class, or whole school on command, *“Right-turn,”* should make 8 right turns, followed by 8 left, 8 half-right, 8 half-left, and 8 right-about turns. In the right-about turn, make the 3 movements on the first 3 beats of the bar, and rest on the 4th. To move from one turn to the next, the teacher should either name the turn, or give the command, *“Change.”*

*Hints.*—After each turn scholars should be at Attention.



See that there is no swaying of body or arms, especially the latter.

There should be no scraping of feet, which should be placed in position smartly, without stamping or bending the knees.

Take care that the feet are always open at the same angle, and also that the feet, whether at Attention, drawn back, or put forward, always point in the same direction.

In all the turns the first movements should always be made with the right foot.

### III

## MARCHING AND WHEELING

THIS is, of all branches of physical exercises, the most important in its effects on the discipline of a school.

Marching should not merely be practised once a week, when the class goes out for the weekly drill, but should be used whenever the children move from place to place. The teacher's aim should be to get the children to walk in a natural manner. The children, starting from the position of attention, should march with an uniform length of step, at an even rate, at the same distance from each other, and looking to the front. This will soon be attained if the teachers will follow the instructions given, and practise them regularly.

Arrange the class in a line, according to size, beginning with the shortest. Give the command "*Attention*," and dress the line by the tallest. Now teach them to mark time, *i.e.* to move the feet at marching rate, without moving from position.

**Marking Time for Boys.**—Raise the left knee until the foot is well off the ground, pointing toes downwards. In placing foot on the ground, let the tread touch first, avoiding too much noise. The same with the right foot. The knee in marking time should be raised higher than in marching, and the line should show the knees bent at a good angle.

**Marking Time for Girls.**—Bend the left knee slightly, and

push the foot forward, pointing toes to the ground. Repeat same with the right.

**Rate of Movement.**—For ordinary school-marching, aim at getting 120 steps to the minute. This requires a great deal of practice, but well repays the time spent on it. The teacher should practise it, watch in hand, to get the correct rate. The best way is to count 10 steps in 5 seconds.

**Turns on the March, or when Marking Time.**—These are much easier than those from the halt, previously described, and should be taught to Infants and Standard 1. The other Standards should practise both.

*Right-turn.*—Keep the same rate of movement, and turn to the right in 2 steps.

*Front-turn.*—By 2 steps come to the front again.

*Left-turn.*—By 2 steps turn to the left.

*Right about-turn.*—This is done in 4 steps, and to be effective should show distinctly two right turns. Give the command as follows:—Say “*Right*,” as the right foot touches the ground; “*About*,” as the left touches, and “*Turn*,” when the right comes down again. (1) The scholars make the first movement of the turn with the left foot; (2) they bring the right foot to it (they have now made a right turn and are in file); (3) they turn with the left foot again, and (4) bring the right to it. This completes the turn, and the children are standing with their backs to the teacher.

**Marching in File.**—Marching lessons should not be begun until the class has acquired an even rate of marking time, and always lead off with the little ones, starting with the left foot, all together, and not one after the other. Thus give the command, “*Mark-Time*.” As soon as the rate is even, say “*Right-turn*,” and then “*Forward*.”

Practise the class in marching without previously marking time, or, as it is called, from the halt. On the command “*Quick-March*,” every one should step off at the regular marching rate.

When a class starts to march from marking time, the order

is—" *Forward.*" When from the halt, the command is—" *Quick-March*"

**Halt.**—This is a command used to stop either marching or exercises. In marching, when the halt is given, complete the step with the moving foot, then bring the other to it, and stand at Attention. It is a good plan to count "*One—Two*" after the command "*Halt*" in order to ensure a smart finish.

**Change Step.**—A class may be marching, and keeping good time, with some of the children out of step. These may easily be detected and told to "*Change-Step.*"

Every child must know how to change step and should be taught thus: (1) Take a step forward with the left foot. (2) Bring the toe of the right foot to the heel of the left. (3) Step forward again with the left foot, and walk on.

Practise this several times, until the 3 movements can be done in the time of 2 steps of ordinary marching.

Practise changing step, beginning with the *right* foot, and so on. It is a good plan to make a mark on the floor, and make each member of the class change step as he passes it.

Afterwards practise changing step by all the class on the march, giving the command "*Change,*" as the left, and "*Step*" as the right foot comes to the ground, or *vice versa*. It is easily learnt, and is almost instinctively done by two persons walking together, when out of step.

**Chain Marching.**—This is the best method of teaching children to keep the proper distances, and to take an even length of step, and should not be taught until all can march in step.

Let each one place both hands on the shoulders of the one in front, and then give the order "*Quick-March.*"

**Right-about Turn on the March.**—This is good practice, and should be taught exactly as explained in marking time. Directly the word "*Turn*" is given, all stand, and without losing the marching rhythm, make the turn in 4 movements (shewing two right-turns) and step off on the fifth in the opposite direction, the end scholar becoming the leader. If this is done well, the



second movement in the turn shows the class in line, and the fourth brings it in file again.

**Marching in Line or Abreast.**—The line should mark time, and then have the command, “*By the Centre—Forward.*” This means that instead of dressing by the right or left, it is done by the *centre*, and the scholars glance in that direction during the march, so as to keep the line straight.

**Wheeling in File. Right-wheel. Left-wheel.**—To wheel is to change a class from marching in one direction to another at right angles to it, either to left or right, on command. The teacher gives the command, “*Right-wheel.*” Then the leader, by taking a short step with the inner foot, turns to the right, and moves on in the new direction; the others do this in succession as they arrive at the same place. This must be done without losing distances, and to avoid this, the teacher may stand at the pivot-point, and make every scholar come straight to him before wheeling.

*Left-wheel* is done in the same way, turning to the left.

*Right-about wheel.*—The children, by making two right wheels as above, will turn at the wheeling point, and march in a direction opposite but parallel to that taken before.

*Left-about wheel.*—As above, to the left. Marching in opposite directions after a right or left about wheel is known as

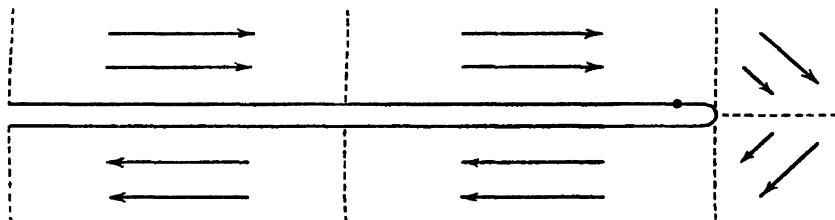


FIG. 6.

*Counter Marching* (Fig. 6). The difficulty in counter marching is to prevent bulging at the turning points, which may for convenience be marked upon the floor.

**Stepping short.**—When a class is marching in file, and the

spaces between the children are too wide, give the order, "*Step short in front.*" The leader immediately reduces the length of his step, those following doing the same until the spaces are correct. On the command "*Forward,*" resume the ordinary pace.

"*Mark Time in Front*" is another and quicker way of correcting distances. On this command the leader stops, and marks time; those who follow doing likewise as they fill up the gaps. When this is done, give the command "*Halt.*"

**Practice for Marching and Wheeling in Fours.**—Use the formation of fours in accordance with instructions given on p. 61. When first commencing to march and wheel in fours, it is a good plan for the teacher to draw a line on the floor, stopping the class when the first four come up to the line. Another line may be drawn at right angles to the first, and the first four may then be practised in wheeling from one line to the other.

On the command "*Right (or left) Wheel-Forward,*" the whole class marches forwards 4 steps, stopping when the second four have arrived at the first line A (the first four are now 4 steps beyond line B). The second four then practise wheeling between

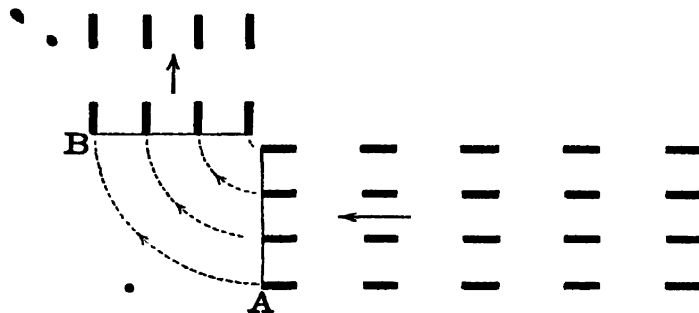


FIG. 7.

the two lines A and B. Again the whole class marches forward 4 steps, bringing the third four to line A, and so on, until all have had this practice in wheeling (Fig. 7).

**Hints.**—See that the feet are in the position of attention before starting, and are kept at the same angle during the march.

The marching should be at one rate, viz. 120 steps to the minute.

Avoid anything artificial in the step, such as marching with stiff legs, or going to the other extreme of raising the knees too high, stamping, and taking too short a step. In either case, the rate soon quickens to a trot. When the rate is too fast, halt, and start again. Beat time with a stick, or count "1, 2, 3, 4." and do not say "*Left, Left,*" on every alternate step, as this encourages the habit of stamping with the left foot. Avoid the heavy tread caused by pointing the toes upward, and striking the ground with the *edge* of the heel.

It is impossible to give a definite length of step for marching in schools, owing to the varied sizes of the children. The little ones should lead, and take a good, natural step. The advancing foot should be brought down heel first, and remain flat, until the body moving forward draws up the heel, the toes being last to leave the ground.

When marching in file, the scholars should be able to touch each other with arms extended in front.

The arms should hang easily and naturally by the side.

## IV

### RUNNING, OR THE DOUBLE MARCH

RUNNING is capital exercise for children in frosty weather, and it is always advisable to finish with a short run after exercises in the yard on a cold day.

Considerable difficulty will be experienced at first by the teacher in getting the running done evenly and steadily, but this difficulty is greatly reduced if the children are proficient in ordinary marching; indeed, no teacher should attempt the running exercise with a class that cannot march steadily.

Arrange children in file according to size, from the shortest to the tallest. The hands must be closed, with the arms bent at the elbow and touching the sides of the chest; or the hands can be placed on the hips, as in the body movements.

The children take up one or other position on the command:—

**“Arms to chest—Raise,”** or ;

**“Hands on hips—Place.”**

The rate of movement should now be practised by marking time, on the command:—

**“Double Mark-Time.”**

At “*Time*” raise the left and right feet alternately as in marching, but a little higher, and touch the ground only with the toes. The body should be inclined a little forward, with head erect and looking to the front. Marking time should

be practised until all can do it at an even rate and without swaying the body to and fro. The rate is one-third quicker than in marching,—160 steps to the minute. When this is accomplished, the children should be sent forward on command “*Go*,” and care must be taken that all start together with the left foot, run on the toes, and take steps a little longer than in ordinary marching. Let them run in file round the yard until all can go steadily, and keep equal distances.

Afterwards practise running and marching alternately. Change from marching to running by the command “*Double*”: and from running to marching by the command “*Quick march*.”

When the command “*Double*” is given, as the children start to run, the arms must be raised to position (to chest or on hips), and dropped to sides on resuming the quick march.

**Counter running**, the **Spiral**, and **Figure Marching** may now be practised.

When any of the scholars are out of step, it must be corrected by hopping one step on either foot, and not by the method employed in marching.

## V

### DESK DRILL FOR INDOOR EXERCISES

**"Atten-tion."**—On this command the children sit upright, with feet on the floor, heels together, toes open, hands by sides.

**"Cover."**—On this command every child must sit exactly covering the child in front of him.

**"On the Forms—One, Two, Three."**—At *One*, all stand smartly, rising from their seats without noise. At *Two*, all turn to the right—placing right foot on the form, left hand on desk to the left, and right hand on desk to the right. At *Three*, all spring on to the form, and stand there perfectly still, facing to the right.

**"Front-Turn."**—This movement must be made in two distinct steps, one with each foot. The turns previously described cannot be done on the forms.

**"Half Right-Turn."**—This must also be done in two steps, and then all will be facing a corner of the room. In this position all the school exercises can be practised.

In dirty weather, and where dual desks are used, instead of standing on the seats the following plan may be substituted:—

**"Atten-tion."**

**"Ends of Desks."**

**"Cover."**

**"Into the Sides—One—Two."**—(*Sides* means the passages between the desks.) At *One*, all stand at Attention. At *Two*, all

those standing at left ends of desks step to the left, and a little forward, when they will be standing alongside the desks. At the same time, all those standing at right ends of desks step to the right and a little backward, when they will be standing alongside seats. All will then be in the gangways, each behind the other, in file.

**"Right-Turn."**

**"One arm's distance, Ex-tend"** (see page 47).—If there is room for this extension, the children should then make a front turn, and proceed with the exercises.

Or (as an alternative plan), while the children are standing behind each other in the gangways, let those at the back stand still, while the others move forward until there is room for all to extend their arms in front without touching each other.

In schools where long desks are used, there is generally standing room behind the seats, and the exercises may be done there.

Exercises on the forms are completed by the following commands:—

**"Front-Turn."**

**"Right-Turn."**

**"Sit—One—Two—Three."**—At *One*, drop the left foot to the floor, placing one hand on each desk. At *Two*, drop the right foot, and stand front at attention. At *Three*, sit down.

Exercises in the passages between the desks are completed by the following commands:—

**"Right-Turn."**

**"To the Right—Close."**—On the word, "Close," all step sideways, until the spaces are filled up.

**"Front-Turn."**

**"Into the Seats—One—Two."**—At *One*, all step to the places at the desks. At *Two*, all sit down.

## VI

### ARRANGING A CLASS FOR EXERCISE IN THE SCHOOLYARD

**“Fall-in,” “Atten-tion,” “Eyes-right (or left),” “Dress.”**  
—The class should fall in according to size—the tallest at one end and the shortest at the other.

**“From the right (or left) in fours—Number.”**—Beginning from the right (or left) the scholars should call out sharply and distinctly, one after the other, the numbers “One,” “Two,” “Three,” “Four,” repeating them to the end of the line.

**Proving.**—At command “*Ones - prove,*” the number ones should raise the right fore-arm to the front, keeping the elbow to the side. The twos, threes, and fours may be proved in the same manner, so as to see that all know their numbers.

**“Fours to the right (or left)—Wheel.”**—On the command “*Wheel,*” number ones stand firm, and together with the twos and threes look towards the fours, while the fours look towards the ones. Meanwhile all the ones, twos, threes, and fours wheel out. This movement should be done in four steps of different lengths. Number fours have to take the longest steps; threes a little shorter; twos shorter still; while ones stand on their own ground and mark time, bringing the body gradually round to the new position in time with the other three. The class is now standing in rows of four, at right angles to the original line. Number ones are called pivots. By practice this



wheeling should be done with the precision of opening so many doors.

In order to send the class back into line, the commands are :

**"Reform the line—March";** or

**"Backwards into line—Wheel."**

The simplest and quickest way to teach this wheeling is to give a stave (4 ft. long) to every number one. On the command "*Staves down*," number ones lower the staves into a horizontal position, and twos, threes, and fours take hold of it. Make a mark on the ground against the feet of every number one, in order to see that they do not move from their position, and then practise the wheeling forwards and backwards. Always mark time before wheeling, as it balances the step. Practise the wheeling in the opposite direction, making fours the pivots.

**"To the left (or right) double arm's distance—Ex-tend."**

—Give this command first to the front four, whereupon numbers two, three, and four step sideways by short steps of about 8 inches with the left foot, bringing the right to it (as in the position of attention). Continue this side march, and as they step out, all four raise their arms horizontally as high as the shoulders, palms upwards. When they are about 6 inches clear of each other by the tips of the fingers, give the commands, "*Halt*," "*Attention*."

The remainder, on command, now step sideways, but without raising arms, and keep exactly behind each other, until they exactly cover numbers two, three, and four respectively in the front row of four, when they must stop at once.

**Another way to open.**—Arrange the first four as above, then give the commands :

**"Twos, threes, and fours—Left-turn."**

**"Mark-time."**

**"Open order—March."**

On the command "*March*," the twos, threes, and fours step forward until the twos are level with number two in the front row, the threes with number three, and so on. They then turn to the front, and stand at attention.

**“Cover.”**—On this command every scholar stands immediately behind the one in front. After covering, dress by number ones, who have not moved.

The class can now work the exercises as they stand, or face in any direction the teacher likes.

Always give some practice in Turns, when set out for exercises.

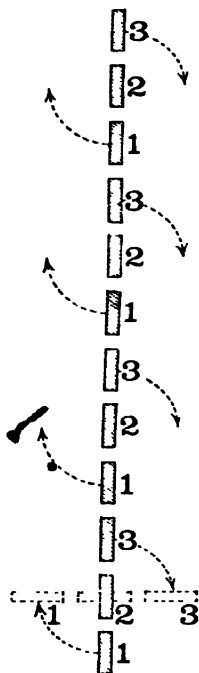


FIG. 8.

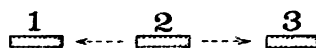
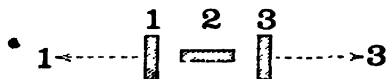


FIG. 9.

**Formation in Threes.**—If there is not sufficient space in the yard for the above arrangement, number in threes instead of fours.

When it is desired to wheel in threes, let the class fall-in in the middle of the yard, and when ready to wheel let the twos stand still, and act as pivots, while the ones wheel backward and the threes forward (Fig. 8). Numbers one and three in the front now must be extended to double arm distance.

**“Outwards—Turn.”**

**"Ones and threes—Turn outwards"** (Fig. 9).

**"Open order—March"** (as before).

*Another way.*—Extend to one arm's distance only. Each must then make half a turn to the left (or right) in order to get sufficient room to do the exercises.

A third plan of opening is shown in the notes on figure marching.

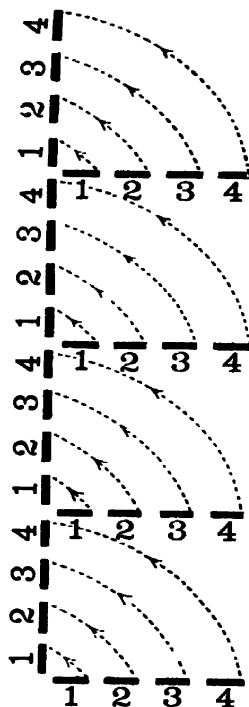


FIG. 10.

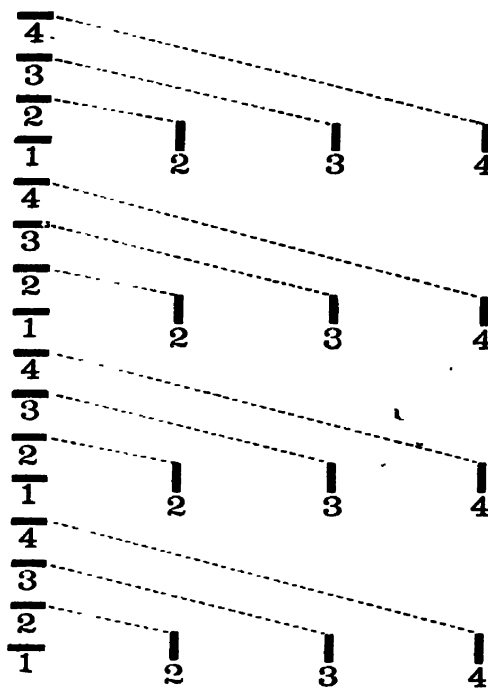


FIG. 11.

### Methods of Closing after the Exercises

**METHOD I. "To the right (or left)—Close."**—On the word "*Close*," the twos, threes, and fours step sideways and close up to number ones.

**"Reform the line—March."**—On this command the fours wheel backward into line (see Fig. 10).

**METHOD II. "Number ones, Stand Firm."**

**"The remainder—Right (or Left) Turn."**

**"Mark-time."**

**"Close order—March."**

On the command "*March*," twos, threes, and fours march diagonally into file, and turn so as ultimately to face the same way as number ones. This is the better method if the class is to be taken quickly back into school, and will readily be understood by reference to Fig. 11.

In order to close after being extended in threes, with twos acting as pivots, give the commands:

*"Inwards—Turn."* (Ones and threes turn towards twos.)

*"Close order—March"* (as before) (Fig. 12).

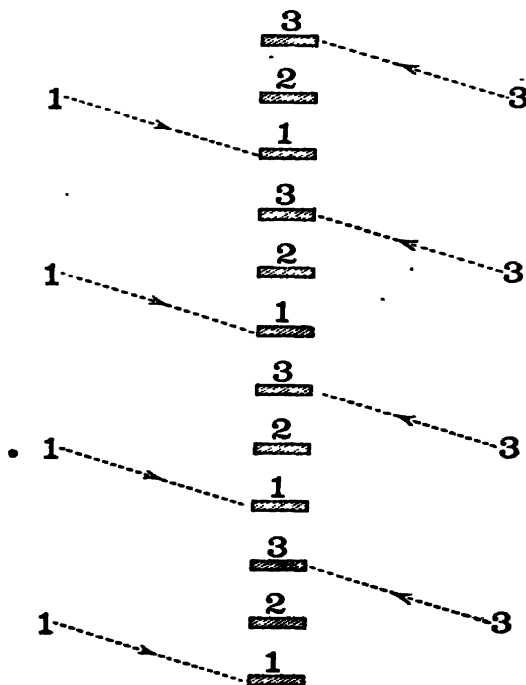


FIG. 12.

## VII

### FREE EXERCISES

#### PRELIMINARY NOTE

THE following terms and phrases frequently recur throughout the exercises, and are therefore explained here, once for all :—

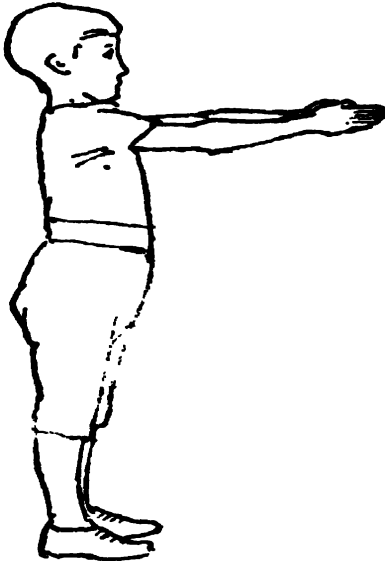


FIG. 13.

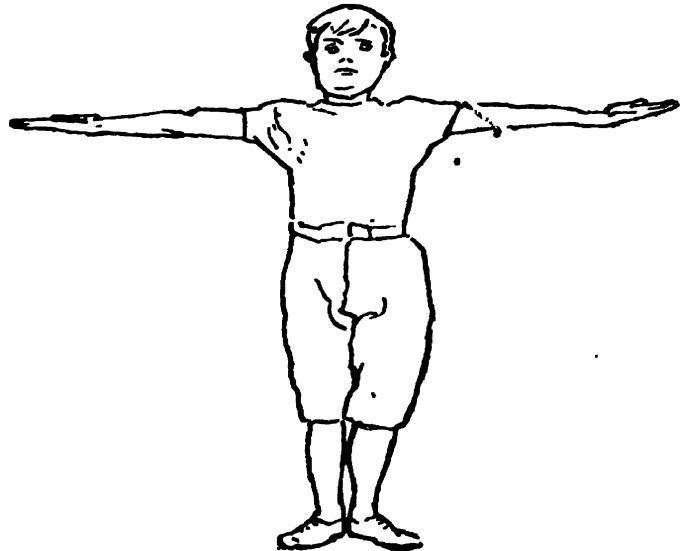


FIG. 14.

**Arms forward.**—(Fig. 13.) The arms are to be fully extended in front of the body, at the height of the shoulders, with the palms turned *inward*. In this movement, in the stave

exercises, the palms are turned *downward*. When a different position of palms is required, it will be specially mentioned.

**Arms sideways.**—(Fig. 14.) The arms are to be fully extended on each side of the body, at the height of the shoulders, and with the palms turned upward. When a different position of the palms is required, it will be specially mentioned.

**Arms overhead.**—(Fig. 15.) The arms are to be kept straight, and raised either forwards or sideways as high as possible above the head, with the palms turned inward.

**Overhead (forward).**—The arms are raised in a forward and upward direction to the overhead position.

**Overhead (sideways).**—The arms are raised upwards from the sides to the overhead position.

**Arms upward.**—The arms are thrust directly upwards, from the shoulders or chest, to the overhead position.

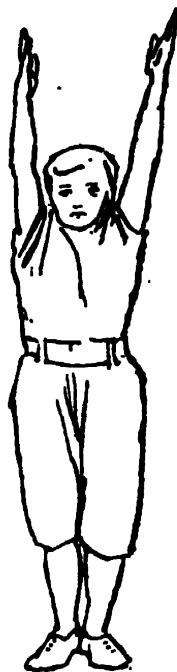


FIG. 15.



FIG. 16.

**Arms to chest—Raise.**—(Fig. 16.) In performing this movement, always keep the arms straight until they are raised slightly higher than in the forward position. Then bend the elbows, and force them back until the hands come to the sides of the chest, near the shoulders. In dumb-bell exercises care must be taken that the bells are not allowed to strike the chest.

## (A.) ARM EXERCISES

*Children standing at Attention*

### EXERCISE I

**"Ready."**—On command "*Ready*" place tips of fingers on shoulders with elbows well back and down. (Fig. 17.)

**"Begin."**—1. Left arm forward. 2. Back to shoulder.



FIG. 17.



FIG. 18.

- |                                            |                        |
|--------------------------------------------|------------------------|
| 3. Right arm forward.                      | 4. Back to shoulder.   |
| 5. Both arms forward (see p. 66, fig. 13). | 6. Back to shoulders.  |
| 7. Clap hands (Fig. 18).                   | 8. Hands on shoulders. |

- "Change."**—1. Left arm sideways. 2. Back to shoulder.  
3. Right arm sideways. 4. Back to shoulder.  
5. Both arms sideways  
(see p. 66, fig. 14). 6. Back to shoulders.  
7. Clap hands. 8. Both hands to  
shoulders.
- "Change."**—1. Left arm upwards. 2. Back to shoulder.  
3. Right arm upwards. 4. Back to shoulder.  
5. Both arms upwards  
(see p. 67, fig. 15). 6. Back to shoulders.  
7. Clap hands. 8. Both hands on  
shoulders.
- "Change."**—1. Both arms forward. 2. Back to shoulders.  
3. Both arms sideways. 4. Back to shoulders.  
5. Both arms upward. 6. Back to shoulders.  
7. Clap hands. 8. Both hands to  
shoulders.

**"Halt"—"Attention"**

Repeat each part three times before changing.

*Note.*—As the exercise concludes with hands on shoulders, the command  
"Attention" is given to bring them to sides.

Clap hands in front of chest, fingers together and pointing upward.

Keep them firmly together during the pause.

No. 8 always brings scholars back to *Ready* position.

Give the order to change just before the clap.

EXERCISE 2

**"Ready."**—Place hands in front of the body, locking the  
thumbs (Fig. 19 *a*).

**"Swing:"**—1. Forward in front of shoulders (Fig. 19 *b*).  
2. Arms overhead.  
3. Arms back to position 1.  
4. Arms to sides.



- "Change."**—1. Arms sideways.  
2. Clap hands overhead (Fig. 20).  
3. Arms sideways.  
4. Arms to sides.

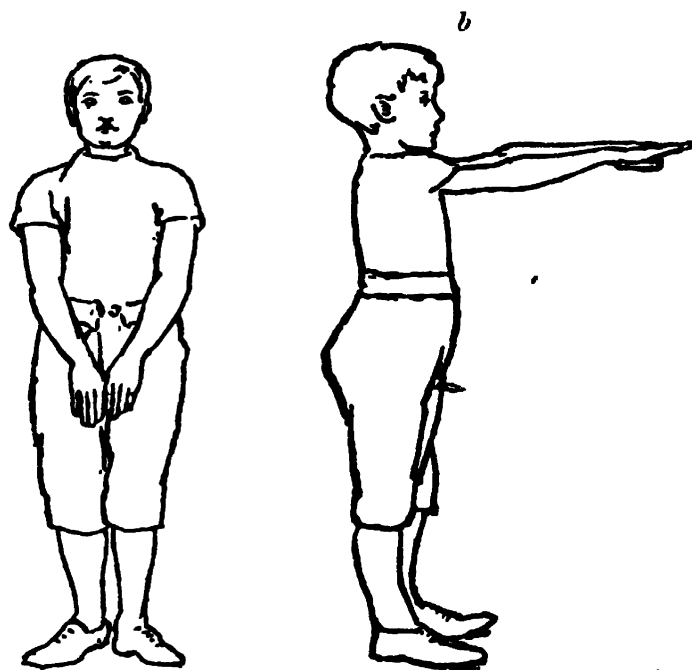


FIG. 19.



FIG. 20.

- "Change."**—1. Arms forward.  
2. Arms overhead.  
3. Arms sideways.  
4. Arms to sides.

**"Halt"**

Repeat each part 4 times before changing.

*Note.*—Keep hands firmly together at the clap.

## EXERCISE 3

*Straight arms*

- "Swing."**—1. Left arm overhead (forward).  
 2. Arm down to side.  
 3 and 4. Repeat.
- "Change."**—1. Right arm overhead (forward).  
 2. Arm down to side.  
 3 and 4. Repeat.
- "Change."**—1. Left arm overhead (forward).  
 2. Arm down to side.  
 3. Right arm overhead (forward).  
 4. Arm down to side.
- "Change."**—1. Both arms overhead (forward).  
 2. Both arms sideways.  
 3. Clap hands overhead.  
 4. Both arms down to sides (forward).

**"Halt"**

Repeat 3 times

*Note.*—The movements in this exercise are twice the length of those in 1 and 2, and sufficient time must be given to carry them out thoroughly.

## EXERCISE 4

*Straight Arms*

- "Swing."**—1. Left arm overhead (forward).  
 2. Turn palm outward.  
 3. Drop arm backward and downward to height of shoulder, palm still outward.  
 4. Arm to side.
- "Change."**—Same with right arm.

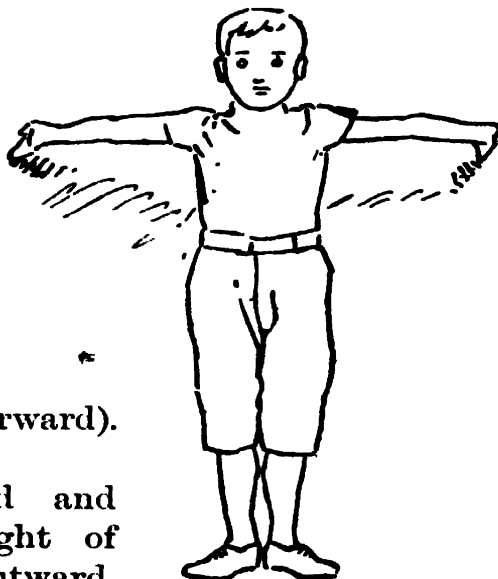


FIG. 21

**"Change."**—Same with left and right arm alternately.

**"Change."**—Same with both arms together (Fig. 21).

### **"Halt"**

Repeat 3 or 4 times before changing

*Note.*—The palm is turned outward at No. 2, in order to allow the arm to move backward at No. 3.

## EXERCISE 5

### *Straight Arms with Rotation Movements*

- "Twist."**—1. Turn palms outward.  
2. Turn palms inward.  
3 and 4. Repeat.

Change to arms forward palms (inward).

- "Twist."**—1. Turn palms downward.  
2. Turn palms upward.  
3 and 4. Repeat.

Change to arms sideways (palms front).

- "Twist."**—1. Turn palms downward.  
2. Turn palms upward.  
3 and 4. Repeat.

Change to arms overhead (palms inward).

- "Twist."**—1. Turn palms outward.  
2. Turn palms inward.  
3 and 4. Repeat.

### **"Halt"—"Attention"**

Repeat 3 or 4 times before changing.

*Note.*—This exercise is not continuous, but stops each time after taking up new position.

Give the order to change as usual on No. 3, take up new position at No. 4 and stop; commencing again on command, "*Twist.*"

EXERCISE 6

*Bent Arms, with Hands Closed*

**"Begin."**—1. Raise arms to chest (see p. 67, fig. 16).

2. Arms to sides.

3 and 4. Repeat.

**"Change."**—1. Bring arms to chest. 2. Arms forward.

3. " " 4. " to sides.

**"Change."**—1. " " 2. " sideways.

3. " " 4. " to sides.

**"Change."**—1. " " 2. " upward.

3. " " 4. " to sides.

**"Change."**—1. " " 2. " forward.

3. " " 4. " sideways.

5. " " 6. " upwards.

7. " " 8. " to sides.

**"Halt"**

Repeat each 3 times before changing.

*Note.*—In the forward and sideways movements, thrust the arms out straight ; and in returning them to the chest make a slight curve.

EXERCISE 7

*Straight Arms*

**"Swing."**—1. Arms forward.

2. Arms to sides.

3 and 4. Repeat.

**"Change."**—1. Arms forward. 2. Arms sideways (palms front).

3. " " 4. " to sides.



**"Change."**—1. Clap hands overhead.

2. Clap hands behind.

3 and 4. Repeat.

**"Change."**—1. Clap hands in front.

2. Clap hands behind.

3. Clap hands overhead.

4. Clap hands behind.

**"Halt"**

Repeat each movement 4 times.

•

# EXERCISE 10

## *Bent Arms, with Hands Closed*

**"Begin."**—1. Raise arms to chest.

2. Left arm obliquely forward and upward (see p. 90, fig. 45).

Right arm downward and backward.

Palms inward.

3. Arms to chest.

4. Arms to sides.

**"Change."**—Same exercise with right arm up and left down.

**"Change."**—Same, alternately.

•

**"Halt"**

Repeat each 4 times.

*Note.*—At the second movement in each part, look up at the hand.

## (B.) BODY MOVEMENTS

THIS section is devoted to exercises of the head, trunk, and legs.

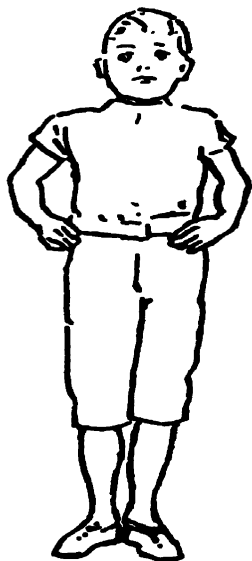


FIG. 23.

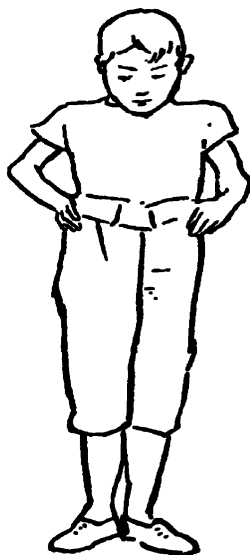


FIG. 24.

These movements cannot be conveniently performed at a quick rate, and are therefore all to be taken in double time (p. 44). They are also all performed with the hands resting upon the hips.

### **"Hands-on-Hips—Place."**

—On this command the hands should be brought quickly on to the hips, with fingers in front, and elbows well back (Fig. 23).

## EXERCISE 1

### *Head Movements*

**"Head Forward—Bend."**—1. Bend head forward until chin touches the chest (Fig. 24).

3. Head erect.

**"Change."**—1. Bend head backward (Fig. 25).

3. Head erect.

**"Change."**—1. Bend head to left (Fig. 26).

3. Head erect.

**"Change."**—1. Bend head to right.  
3. Head erect.

**"Change."**—1. Turn head to left until chin is over the left shoulder (Fig. 27).  
3. Head front.

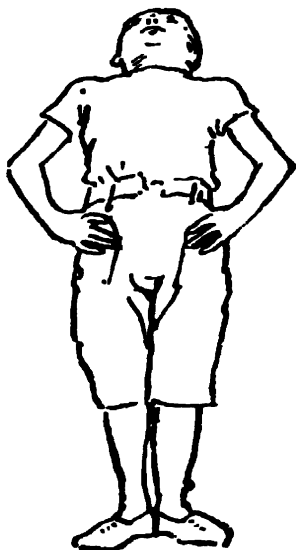


FIG. 25.

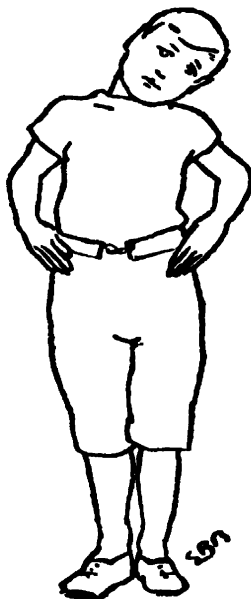


FIG. 26.

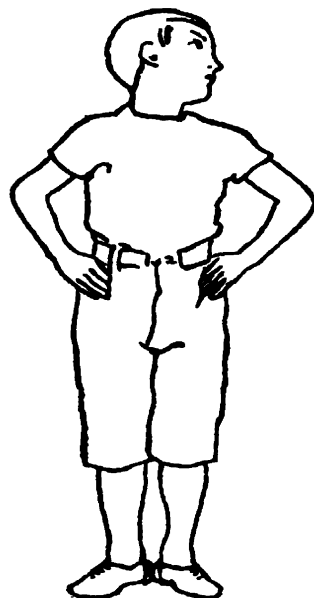


FIG. 27.

**"Change."**—1. Turn head to right until chin is over right shoulder.  
3. Head front.

**"Change."**—The two last movements alternately.

**"Halt"**

:

Repeat each 4 times.

*Note.*—The back should not be bent in these movements. The shoulder should not be raised in bending sideways.  
Keep the body firm to front, when the head is turned.  
This exercise may also be taken with the arms at Attention.



## EXERCISE 2

*Body (Trunk) Movements*

**"Bend."**—1. Bend forward from hips, with the legs firm and straight, and the head steady and looking forward, until the legs and upper part of the body form nearly a right angle (Fig. 28).

3. Body upright.

**"Change."**—1. Bend body backward (Fig. 29).

3. Body upright.

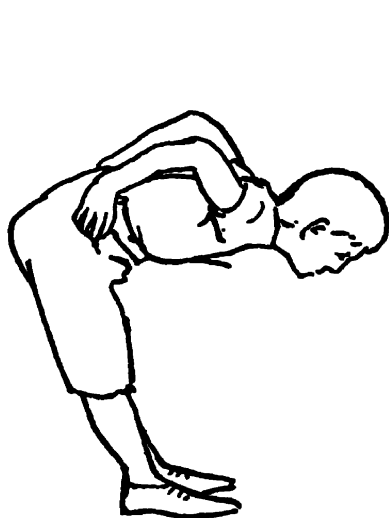


FIG. 28.



FIG. 29.



FIG. 30.

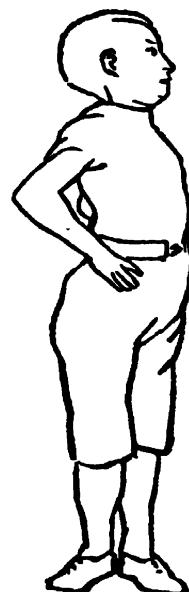


FIG. 31.

**"Change."**—1. Bend body to left (Fig. 30).

3. Body upright.

**"Change."**—1. Bend body to right.

3. Body upright.

**"Change."**—1. Turn body to left from the waist (Fig. 31).

3. Body front.

**"Change."**—Same to right.

**"Change."**—Same alternately.

**"Halt"**

Repeat each 4 times.

*Note.*—When bending body forward children should look to the front.

When bending to left and right the head must be kept steady, and the body must not incline forward.

Omit the backward movement when the exercises are taken with children standing on forms.

When turning, the body must move on the hips until the children look to the left or right, without any independent movement of the head.

### EXERCISE 3

#### *Feet and Leg Movements*

**"Heels—Raise."**—1. Raise the heels well from the ground, standing on the toes, the body upright.

3. Lower the heels, without noise.

**"Left Knee—Raise."**—1. Raise the left knee, until the thigh is at right angles to the body, the heel against the right knee, toes pointing down (Fig. 32).

3. Straighten the leg, pointing it in an oblique direction, in front of the body, with toes pointing down (Fig. 33).

5. Back to position 1.

7. Foot down (position of attention).

**"Change."**—Raise the right knee, same as left.

**"Change."**—Raise the left and right knee alternately.

**"Left Leg Sideways—Swing."**—1. Leg sideways, knee straight and toes pointing down (Fig. 34).

3. Back to position.

**"Change."**—Right leg, same as left.

**"Change."**—Alternately, with left and right leg.

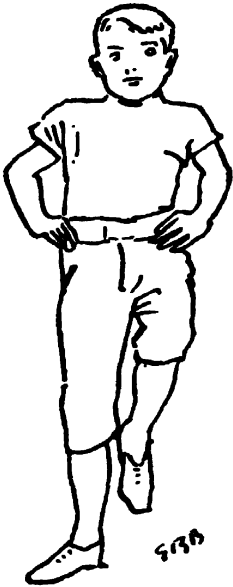


FIG. 32.

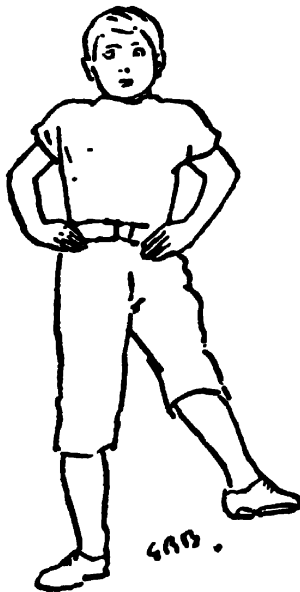


FIG. 33.

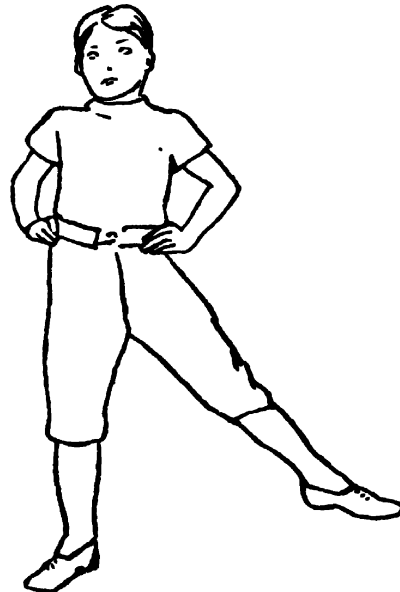


FIG. 34.

**"Right Leg Backward—Swing."**—1. Leg backward, knee straight, and toes pointing down (Fig. 35).

3. Back to position.

**"Change."**—Left leg, same as right.

**"Change."**—Alternately, with left and right leg.

**"Halt"**

Repeat each 4 times.

- “Body to Heels—Sink.”**—1. Raise the heels.  
3. Lower the body to the heels  
(Fig. 36).

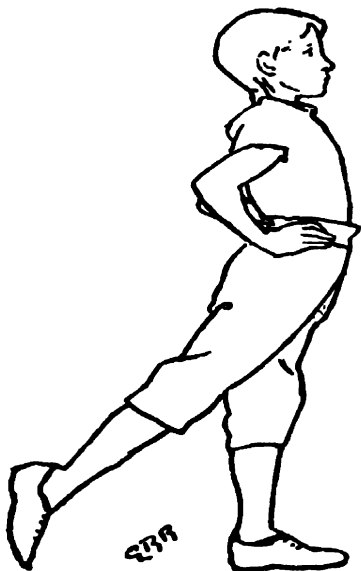


FIG. 35.

5. Straighten body.  
7. Lower the heels.



FIG. 36.

(For boys only.)

**“Halt ”**

Repeat 4 times.

*Note.*—Practise this movement first by sinking the body half-way down.  
Keep the body upright during all these movements.

## EXERCISE 4

### *Lunges*

- “Left Forward—Lunge.”**—1. Take a good step forward  
with the left foot (in a

walking direction), touching the floor with the tread of the foot before the heel, at the same time bending the knee well over the toes (Fig. 37). . .

3. Back to position.

**"Change."**—Same with the right foot.

**"Change."**—Same alternately.

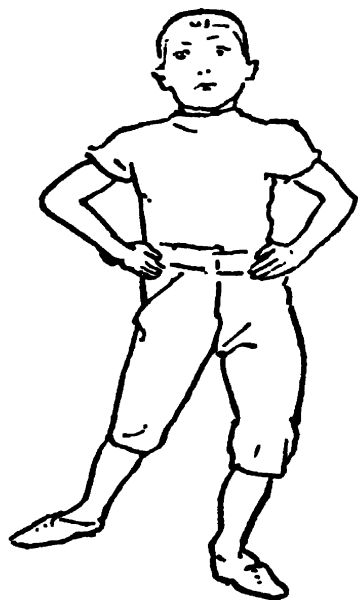


FIG. 37.

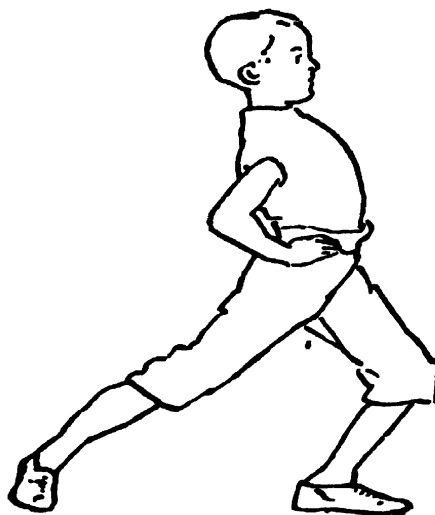


FIG. 38.

**"Left Sideways—Lunge."**—1. Take a good step to the left, turning the body and foot in that direction, and bend the knee well over the toes (Fig. 38).

3. Back to position.

**"Change."**—Same with the right foot.

**"Change."**—Same alternately.

**"Halt"**

Repeat 4 times.

*Note.*—These lunges are very important, as they occur frequently in the dumb-bell and stave exercises, and, at first, are better taught in parts, thus :—

**"Forward Lunge."**—1. Take a step forward.

2. Bend the knee over the toes.

3. Straighten the knee.

4. Foot back to position.

**"Side Lunge."**—1. Step sideways with the left foot, and see that both heels are in a straight line.

2. Turn the left foot out at right angles.

3. Turn the body (from hips) to left.

4. Bend the left knee over the toes.

5. Back to position.

### (C.) COMBINATION EXERCISES

THESE exercises are a combination of the arm and body movements, and must be taken at double-time.

Hundreds of combinations might be made; but as the time devoted to physical exercises in schools is limited, only a few of the most useful for school purposes will be given.



FIG. 39.

#### EXERCISE 1

##### *Straight Arms, with Side Bending*

- "Swing."**—1. Arms overhead, thumbs locked, tips of fingers touching (Fig. 39).  
3. Bend to the left.  
5. Straighten the body.  
7. Arms to sides (in the forward direction).

**"Change."**—Same movement bending to the right.

**"Change."**—Same alternately.

**"Halt"**

Repeat each 4 times.

## EXERCISE 2

*Bent Arms, Hands Closed, with Side Bending*

**"Begin."**—1. Arms to chest.

3. Bend to the right, thrusting left arm upward, and right arm downward, palms front, and look up at the hand (Fig. 40).

5. Straighten the body, and bring arms to chest.

7. Arms to side.

**"Change."**—Same movements, bending to the left, with right arm upward.

**"Change."**—Same alternately.

**"Halt"**

Repeat 4 times.



FIG. 40.

## EXERCISE 3

*Straight Arms, with Side Bending and Turnings*

**"Swing."**—1. Arms sideways (palms up).

3. Bend body to left, keeping arms rigid.

5. Straighten body.

7. Arms to sides.

**"Change."**—Same movements bending to right.

**"Change."**—Same alternately.

**"Change."**—Same arm movements, *turning* the body twice to the left, and twice to the right, and then to the right and left alternately.

**"Halt"**

Repeat 2 or 3 times.



## EXERCISE 4

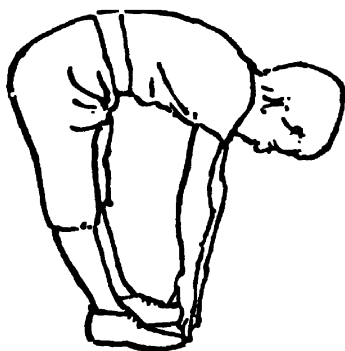
*Straight Arms, with Forward Bending*

FIG. 41.

- “Swing.”**—1. Arms overhead, (sideways). Palms front.  
 3. Bend body forward, and touch toes with the tips of fingers (Fig. 41).  
 5. Straighten body (arms overhead).  
 7. Arms to sides (forward direction).

**“Halt”**

Repeat 4 times.

*Note.*—In No. 3, make the “Body forward bend” movement (Fig. 28), and without any further bending touch the toes with the fingers. The knees must be kept straight.

## EXERCISE 5

*Forward Bendings*

- “Swing.”**—1. Arms sideways, palms down.  
 3. Bend body forward, and bring the finger-tips to the back of the head.  
 5. Straighten body. Arms sideways. Palms down.  
 7. Arms to sides.

**“Halt”**

Repeat 4 times.

## EXERCISE 6

*Straight Arms, with Backward Bending*

- "Swing."**—1. Arms overhead (forward), and step backwards with left foot (Fig. 42 *a*).  
 3. Bend body backward, at the same time drop the arms sideways (Fig. 42 *b*).

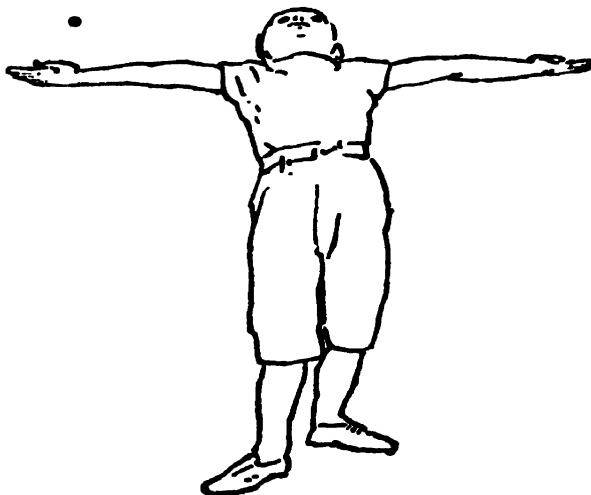


FIG. 42.

5. Straighten the body, and raise arms overhead.  
 7. Arms to sides, and left foot up to position.

**"Change."**—Same movements, stepping back with the right foot.

**"Change."**—Same alternately.

**"Halt"**

Repeat each twice.

## EXERCISE 7

*Straight Arms, with Body Turnings*

**"Swing."**—1. Arms overhead (forward), and at same time turn the body to the left (Fig. 43).

3. Arms to sides, and turn the body to the front.

5. Arms overhead (forward), and turn the body to the right.

7. Arms to sides, and turn the body to the front.

**"Change."**—1. Arms overhead (forward), and turn the body to the left.

3. Swing arms downward and upward to over head; and at the same time turn the body to the right.

5. Swing arms downward and upward, and turn the body to the left.

7. Repeat turning to the right again.



FIG. 43.

**"Halt." "Front." "Attention."**

*Note.*—In the first part of this exercise the arms describe a quarter of a circle, in the second half a circle.

The children halt with arms overhead, and body turned to the right; hence the commands "*Front*" and "*Attention*."

Keep the body upright throughout the exercise.

## EXERCISE 8

*Arm and Feet Movements*

**"Swing."**—1. Arms forward and heels raise.

3. Arms to sides, and lower the heels.

5 and 7. Repeat.

**"Change."**—Same exercise with arms sideways.

**"Change."**—Same exercise, with arms overhead (forward).

**"Halt"**

Repeat 4 times.

### EXERCISE 9

#### *Straight Arm, with Leg Movements*

- "Swing."**—1. Arms forward, and left knee raised.  
3. Arms to sides, left knee lowered.  
5. Arms forward, right knee raised.  
7. Arms to sides, and right knee lowered.

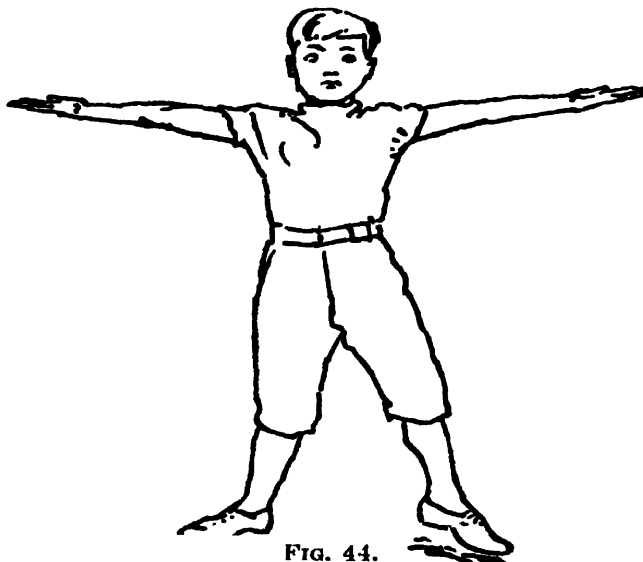


FIG. 44.

- "Change."**—1. Arms sideways, and left foot sideways (Fig. 44).  
3. Arms to sides, and feet together.  
5. Arms sideways, and right foot sideways.  
7. Arms to sides, feet together.

**"Halt"**

Repeat 4 times.

## EXERCISE 10

*Bent Arms with Hands Closed and Forward Lunge*

FIG. 45.

- "Bend."**—1. Arms to chest.  
 3. Thrust left arm obliquely upward, right arm downward and backward, and left forward lunge, looking up at the upward hand (Fig. 45).  
 5. Arms to chest, and foot back to position.  
 7. Arms to sides.
- "Change."**—Same movement, with right arm upward, left arm backward, and right forward lunge.
- "Change."**—Same movements alternately.

**"Halt"**

Repeat 4 times.

*Note.*—In lunging forward, the foot goes out in the direction it points.  
 See that the knee is well bent, and there is no stamping.

## VIII

### DUMB - BELLS

DUMB-BELLS should be made of thoroughly dried beech, for if made of new wood, the ends split, and pieces soon break off. The ends should be circular, about 3 inches in diameter, and should weigh about 1.0 ounces each. For infants and young children, the diameter should not be more than 2 to  $2\frac{1}{2}$  inches, and the weight not more than 6 ounces. They may be had either plain or polished, and should not cost more than—

6/ per dozen	.	.	3 inches in diameter (plain).
5/	„	.	$2\frac{1}{2}$
4/	„	.	2 „ „ „
1/	„	.	extra for polished bells.

Dumb-bells should be used at yard drill for Standard III. and upwards.

Before teaching the exercises, study carefully the positions of the bells, illustrated by the following figures:—

1. Position of bells when brought to chest, and dotted lines showing the direction in raising them from sides to chest, and returning them (Fig. 46).
2. Position of bells when thrust sideways, from chest (Fig. 47).
3. Position of bells, forward in straight arm movements (Fig. 48).
4. Position of bells, sideways in straight arm movements (Fig. 49).
5. Position of bells, upward or overhead (Fig. 50 a).

Attention to these positions is of great importance, as

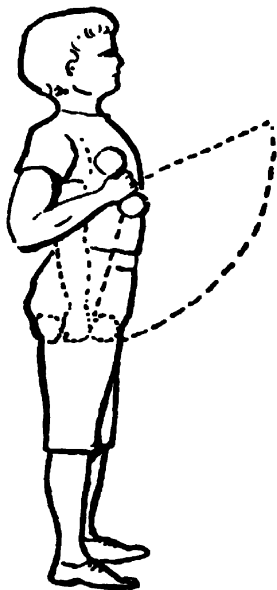


FIG. 46.

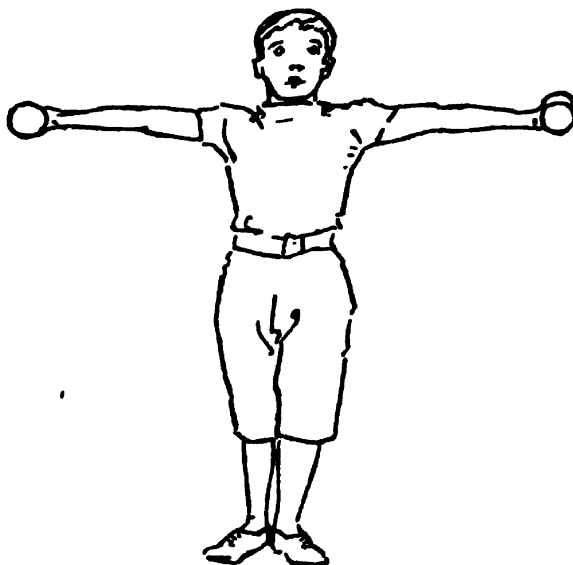


FIG. 47.

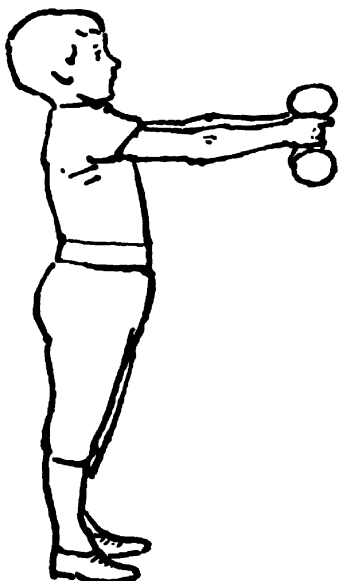


FIG. 48.

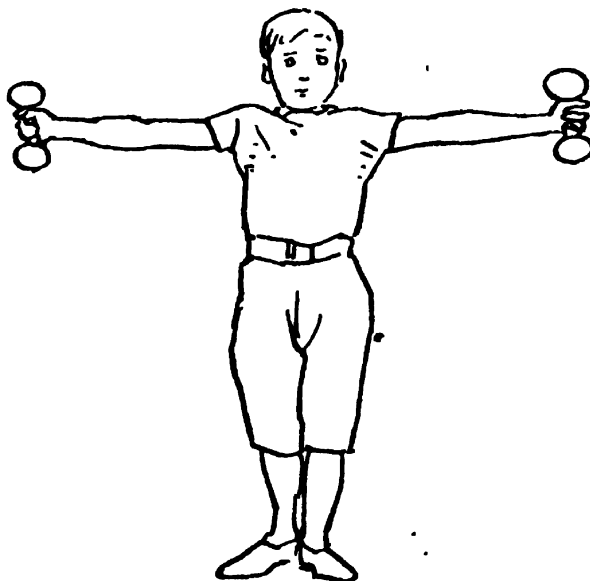


FIG. 49.

making the exercises both more attractive and effective.

Whenever it is necessary to associate movements with the bells in any other positions than those here shown, the fact will be specially indicated by reference to the position of the palms of the hands.

Always look at the bells when thrust upward from the chest.



## EXERCISE 1

### *Wrist Exercises*

#### *First Movements in Position of Attention* (Fig. 50 b)

**"Twist."**—1. Turn palms outward.  
2. Turn palms inward.  
3 and 4. Repeat.

**"Change."**—Arms forward—palms inward.

**"Twist."**—1. Palms downward.  
2. Palms upward.  
3 and 4. Repeat.

**"Change."**—Arms sideways—palms front.

**"Twist."**—1. Palms downward.  
2. Palms upward.  
3 and 4. Repeat.

**"Change."**—Arms overhead—palms inward.

**"Twist."**—1. Palms outward.  
2. Palms inward.  
3 and 4. Repeat.

**"Halt"—"Attention"**

Repeat each part four times.

*Note.*—Give the order to change as usual on No. 3 ; take up new position of arms at 4, and stop. Start again on command "*Twist.*"

FIG. 50.



## EXERCISE 2

**"Ready."**—*Bells to Chest—Raise.*

**"Begin."**—1. Bells forward—palms inward.  
 2. Palms outward.  
 3. Palms inward.  
 4. Bells to chest.

**"Change."**—1. Bells sideways—palms upward.  
 2. Palms downward.  
 3. Palms upward.  
 4. Bells to chest.

**"Change."**—1. Bells upward—palms inward.  
 2. Palms outward.  
 3. Palms inward.  
 4. Bells to chest.

**"Halt"—"Attention"**

Repeat each 4 times.

*Note.*—The bells should describe half a circle at each twist.

## EXERCISE 3

*Wrist movements with arms at right angles to each other  
 throughout the exercise*

**"Ready."**—"Bells to chest—Raise."

**"Begin."**—1. Left bell forward—palm inward. Right bell  
 sideways—palm front (Fig. 51).  
 2. Palms downward.  
 3. Bells to position 1.  
 4. Bells to chest.

**"Change."**—1. Right bell forward—palm inward. Left  
 bell sideways—palm front.  
 2. Palms downward.

3. Bells to position 1.
  4. Bells to chest.
- "Change."**—1. Left bell upward—palm inward. Right bell sideways—palm front.
2. Left palm front. Right palm downward.
  3. Bells to position 1.
  4. Bells to chest.
- "Change."**—1. Right bell upward—palm inward. Left bell sideways—palm front.
2. Right palm front. Left palm downward.
  3. Bells to position 1.
  4. Bells to chest.

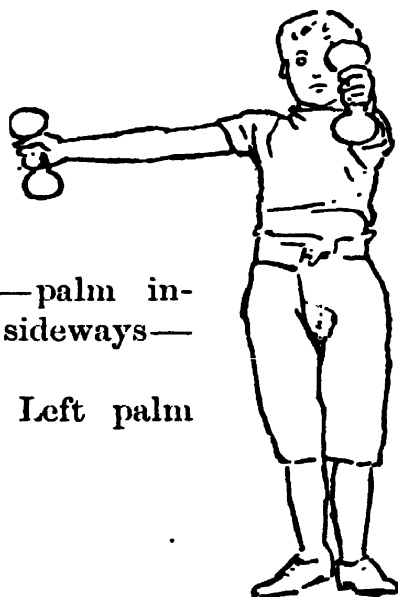


FIG. 51.

**"Halt"—"Attention"**

Repeat 4 times.

*Note.*—The bells should describe a quarter of a circle at each twist.

#### EXERCISE 4

- "Ready."**—*"Bells to chest—Raise."*
- "Begin."**—1. Thrust left bell forward.  
2. Left bell to chest.  
3 and 4. Repeat.
- "Change."**—1. Thrust right bell forward.  
2. Right bell to chest.  
3 and 4. Repeat.
- "Change."**—1. Thrust both bells forward.  
2. Back to chest.  
3 and 4. Repeat.

**"Change."**—Same movements, sideways.

**"Change."**—Same movements, upward.

**"Halt"—"Attention"**

Repeat each 4 times.

*Note.*—In the forward and sideways movements thrust the bells straight from the chest, and in returning them make a slight curve.

## EXERCISE 5

### *Bent Arm Exercise*

**"Begin."**—1. Bells to chest. 2. To sides.

3 and 4. Repeat.

**"Change."**—1. Bells to chest. 2. Forward.

3. " " 4. To sides.

**"Change."**—1. " " 2. Sideways

3. " " 4. To sides.

**"Change."**—1. " " 2. Upward

3. " " 4. To sides.

**"Change."**—1. " " 2. Forward.

3. " " 4. Sideways.

5. " " 6. Upward.

7. " " 8. To sides.

**"Halt"**

Repeat 3 times.

## EXERCISE 6

### *Straight Arms*

**"Swing."**—1. Bells forward. 2. To sides.

3 and 4. Repeat.

- |                                                                                                                                                                                                                                                                                       |                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>"Change."</b>—1. Bells forward.<br/>                           3.       "       "</p> <p><b>"Change."</b>—1.       "       "<br/>                           3.       "       "</p> <p><b>"Change."</b>—1.       "       "<br/>                           3. Bells sideways.</p> | <p>2. Sideways.<br/>         4. To sides.</p> <p>2. Overhead.<br/>         4. To sides.</p> <p>2. Overhead.<br/>         4. To sides.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|

**"Halt "**

Repeat each 3 times.

### EXERCISE 7

#### *Tapping Exercise with Straight Arms*

- "Swing."** —1. Tap bells in front of,  
                   and close to body.  
                   Palms towards body  
                   (Fig. 52).  
                   2. Tap bells behind  
                   (Fig. 53).  
                   3 and 4. Repeat.
- "Change."**—1. Tap bells in front.  
                   2. Behind.  
                   3. Overhead.  
                   4. Behind.

**"Halt "**

Repeat each 4 times.

*Note.*—In raising bells from behind to overhead, each one should describe a semi-circle. The arms should be kept well back. Note particularly the position of the palms in this exercise.

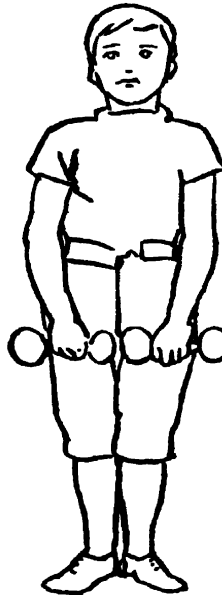


FIG. 52.

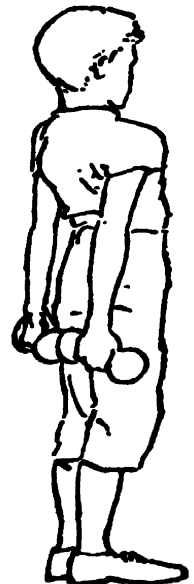


FIG. 53.

## EXERCISE 8

*Tapping Exercise with Bent Arms*

- "Begin."**—1. Tap bells in front of and close to chin.  
 Palms turned to chest (Fig. 54).  
 2. Bells to shoulders—palms front (Fig. 55).  
 3. Bells sideways—palms upward.  
 4. Bells to sides.



FIG. 54.



FIG. 55.

- "Change."**—1. Tap bells in front of and close to chin.  
 2. Bells to shoulders—palms front.  
 3. Bells upward—palms front.  
 4. Tap bells behind—palms next to body  
 (see p. 97, fig. 53).

**"Halt"**

Repeat 4 times.

*Note.*—In the first movement the forearms should be nearly touching in front of chest: in the second the elbows should be forced well back, until the end of each bell touches the top of the arm by the shoulder.

## EXERCISE 9

*Bent Arms with Side Bending*

**'Begin.'**—1. Bells to chest.

2. Thrust the left arm upward, right arm downward, palms front. At the same time bend the body well over to right, and look up at bell (Fig. 56).

3. Bells to chest and straighten body.

4. Bells to sides.

**"Change."**—Same movements, bending to left with right arm up and left arm down.

**"Change."**—Same movements alternately.



FIG. 56.

**"Halt"**

Repeat 4 times.



## EXERCISE 10

*Straight Arms and Side Bending. Double Time*

**"Swing."**—1. Right bell overhead (sideways). Palm outward. At the same time bend body to left and look up at bell, the left bell sliding down by the side of the left leg (Fig. 57).

3. Right bell to side (sideways), and straighten body

5 and 7. Repeat.

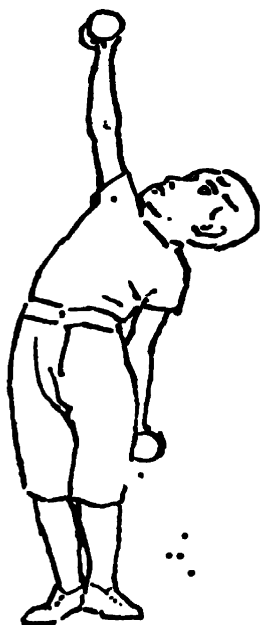


FIG. 57.

**"Change."**—Same movements, bending to the right, with left bell overhead.

- "Change."**—1. Right bell overhead (sideways). Palm outward. At the same time, bend the body to the left, and look up at bell.
3. Right bell to side (sideways). At the same time raise left bell overhead (sideways) and bend the body to the right.
- 5 and 7. Repeat.

**"Halt"—"Attention"**

*Note.*—In the last change the body sways from side to side.

EXERCISE 11

*Straight Arms with Body Turnings*

- "Swing."**—1. Bells overhead (forward); turn the body to the left; step sideways about 15 inches, with the left foot, and raise the right heel (Fig. 58).
3. Bells to sides; turn body to the front, keeping feet apart.
5. Bells overhead (forward); turn the body to the right, and raise the left heel (Fig. 59).
7. Bells to sides, and body front.
- "Change."**—1. Bells overhead; turn body to the left, and raise right heel.
3. Bells downward to upward (overhead); turn body to the right, and raise left heel.
5. Repeat 1.
7. Repeat 3.

**"Halt."**—The arms are now overhead, and the body is turned to the right.

**"Front."**—Keep bells overhead, and make the following circles from that position.

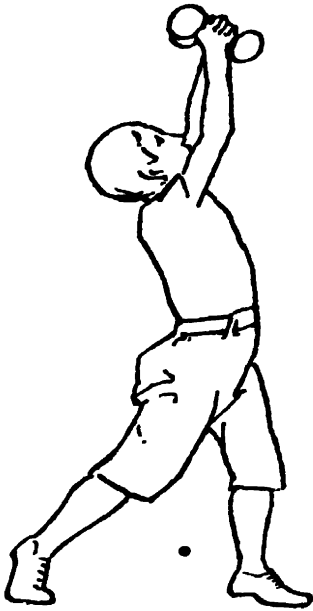


FIG. 58.



FIG. 59.

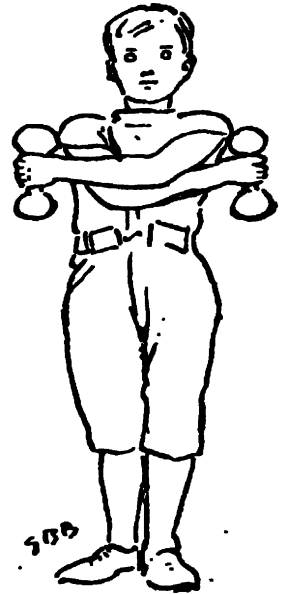


FIG. 60.

**"Swing."**—Make circles with the arms in front of body, counting 1 as they come down, and 2 as they cross in front.

**"Change."**—Stop, with the arms crossed in front of the body, and swing in the opposite direction (Fig. 60).

**"Halt"—"Attention"**

*Note.*—At the first change in swinging the bells from overhead left to overhead right, keep the arms parallel with the body straight, looking up at the bells when overhead.



## EXERCISE 12

*Bent Arms, with Forward Bending*

- "Begin."** — 1. Bells to chest.      2. Bells to sides.  
                   3.       "       "      4. Bells to floor (Fig. 61). . .  
**"Change."**—1.       "       "      2. Bells forward.  
                   3.       "       "      4. Bells to floor (Fig. 62).

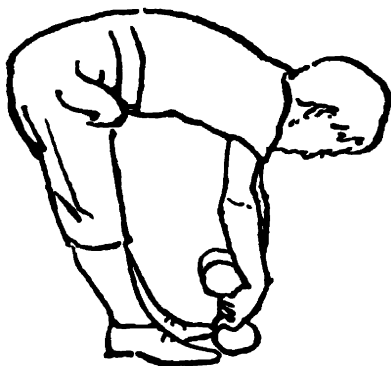


FIG. 61.

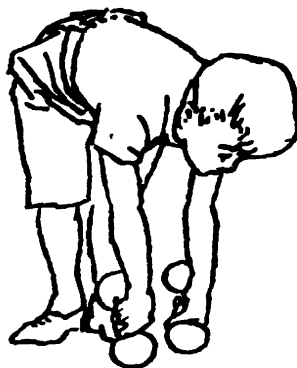


FIG. 62.

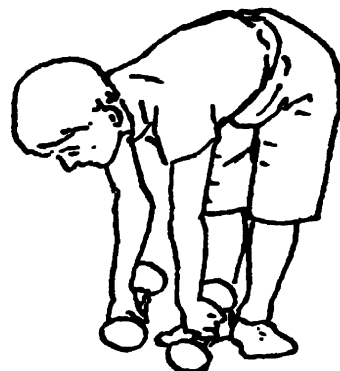


FIG. 63.

- "Change."**—1. Bells to chest.      2. Bells sideways.  
                   3.       "       "      4. Bells to floor (Fig. 63).  
**"Change."**—1.       "       "      2. Bells upward.  
                   3.       "       "      4. Bells to floor (Fig. 61).

**"Halt"**

Repeat 3 times.

*Note.*—In bending to the floor, send the arms well forward from the chest, press the legs back and get into position of "*Body forward bend*" (see body movements). Touch the ground with the front part of the bells only.

Each part is to be repeated 3 times. At the fourth movement in each part touch the ground with the bells (1) between the feet; (2) with the bells on each side of the left foot; (3) with the bells on each side of the right foot; and (4) between the feet.

Do not halt the class with bells on the ground; to avoid this, repeat the last change 4 times, and at fourth movement bring bells to sides instead of to the ground.

EXERCISE 13 (*for boys only*)*Squatting Movements*

**"Left Foot Astride—Place."**—At command "*Place*" take a step sideways with left foot (Fig. 64).

**"Bells-Down."**—At command "*Down*" bend the knees and lower the body well down; placing the bells on the ground between the feet at every fourth movement (Fig. 65). The

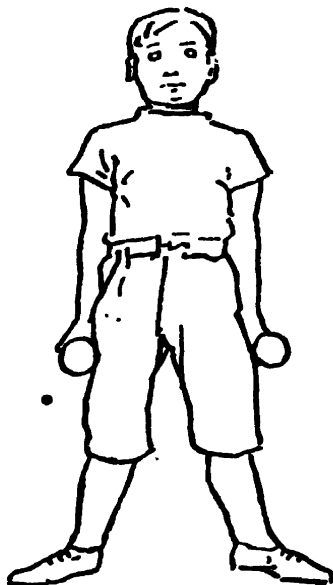


FIG. 64.



FIG. 65.

exercise starts from this position, while at the movements 1, 2, and 3 the body is upright.

**"Begin."** — 1. Bells to chest.

3. " "

**"Change."**—1. " "

3. " "

**"Change."**—1. " "

3. " "

**"Change."**—1. " "

3. " "

2. Bells to sides.

4. Bells down to ground.

2. Bells forward.

4. Bells down to ground.

2. Bells sideways.

4. Bells down to ground.

2. Bells upward.

4. Bells down to ground.

- |                                      |                                       |
|--------------------------------------|---------------------------------------|
| <b>"Change"</b> —1. Bells forward    | 2. Bells to sides.                    |
| <b>Swing."</b> (arms straight).      |                                       |
| 3. " "                               | 4. Bells down to ground.              |
| <b>"Change."</b> —1. " "             | 2. Bells sideways.                    |
| 3. " "                               | 4. Bells down to ground.              |
| <b>"Change."</b> —1. " "             | 2. Bells overhead.                    |
| 3. " "                               | 4. Bells down to ground.              |
| <b>"Change."</b> —1. Bells overhead. | 2. Bells sideways.                    |
| 3. " "                               | 4. Bells down to ground<br>(forward). |

**"Halt." "Recover." "Attention."**

Repeat each part 3 times.

*Note.*—The boys halt with bells on the ground.

On the command "*Recover*," straighten the body, and bring hands to sides.

On the command "*Attention*," bring the feet together.

This is an exercise the first part of which is performed with bent arms, and the latter with straight arms.

Besides "*Change*," give the command "*Swing*," when changing from bent to straight arms.

## EXERCISE 14 (*for boys only*)

### *Hip Movements*

**"Left Foot Astride—Place."**—At this command take a step sideways with left foot, wider than in Exercise 13 (Fig. 66).

**"Left."**—At this command turn the body and left foot well round to the left, bend the left knee, and hold the bells firmly alongside each thigh, keeping body upright (Fig. 67).

**"Bells Down."**—One on each side of the left foot. The exercise begins from this position (Fig. 68).

**"Begin."**—1. Bells to chest, body erect, with knee bent (Fig. 69).

2. Bells forward.

3. Bells to chest.

4. Bells to ground (Fig. 68)

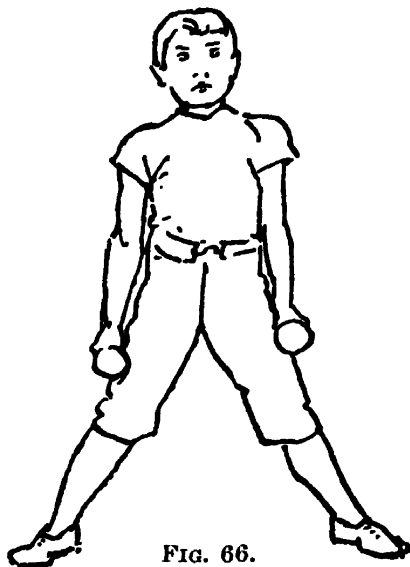


FIG. 66.

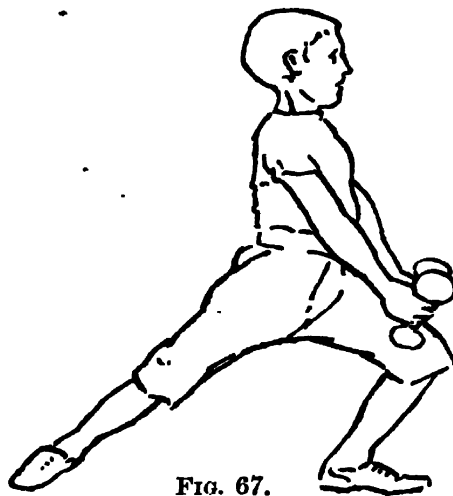


FIG. 67.

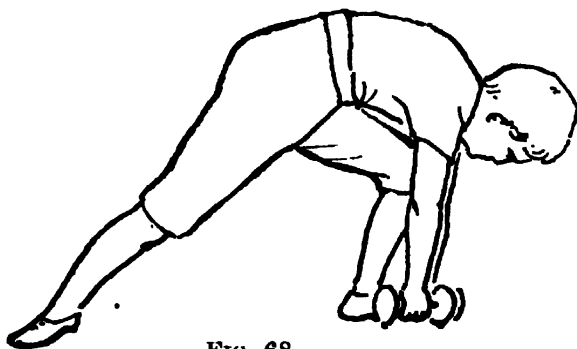


FIG. 68.

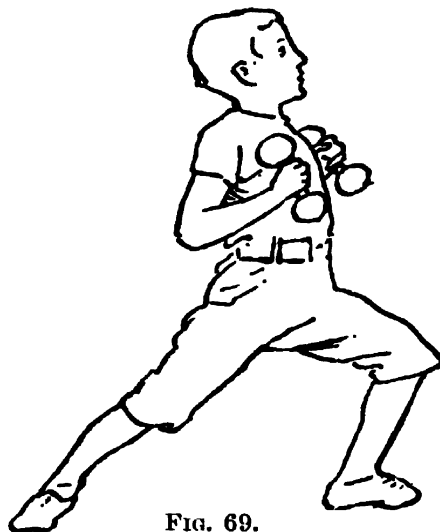


FIG. 69.

**"Halt."** **"Recover"** (Fig. 67). **"Front"** (Fig. 66).  
**"Right."** **"Bells Down."**

Repeat the same movements from the right side.

**"Halt." "Recover." "Front." "Left." "Bells Down."**

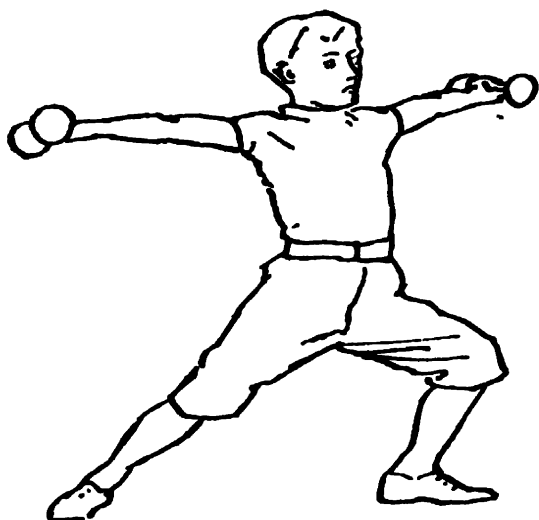


FIG. 70.

- "Raise."**—1. Bells to chest (legs kept in position).  
 2. Bells sideways, and at the same time make half a turn with the body (Fig. 70).  
 3. Bells to chest, with body facing left again.  
 4. Bells down.

**"Halt." "Recover." "Front." "Right." "Bells Down."**

Repeat same movements from the right side.

**"Halt." "Recover." "Front." "Left." "Bells Down."**

- "Raise."**—1. Bells to chest.  
 2. Bells upward, and look at them.  
 3. Bells to chest.  
 4. Bells down.

**"Halt." "Recover." "Front." "Right." "Bells Down."**

Repeat the same from right side.

**"Halt." "Recover." "Front." "Attention."**

Repeat 3 times.

*Note.*—In bending to and rising from the ground, keep the legs firm, and execute the movement entirely from the hips.

Halt with bells down. On the command "*Recover*," raise the body, and bring bells alongside each thigh.

"*Front.*"—Turn to the front, bring hands to sides, but keep the feet apart.

"*Right.*"—Turn the body and right foot to right.

When the exercise is known, it should be practised without stopping.

On command "*Change*," boys should come to 1. "*Recover.*" 2. "*Front.*"

3. "*Right.*" 4. "*Down*," and proceed to the next movement.

This exercise is better if taken at *double time*.

## EXERCISE 15

*Lunges.* (These are fully explained on p. 81.)

"**Begin.**"—1. Bells to chest.

2. Left bell obliquely upward. Right bell obliquely downward and backward. Lunge



FIG. 71.

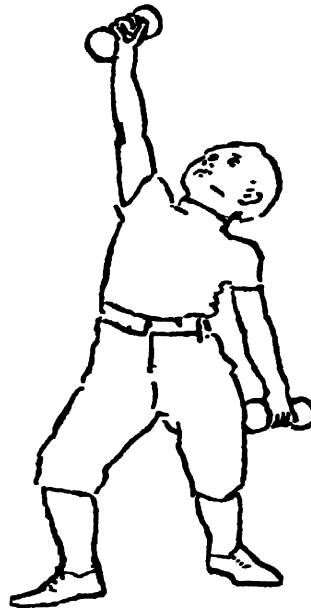


FIG. 72.

with the left foot well forward, and knee bent (Fig. 71).

3. Bells to chest. Left foot back to position.

4. Bells to sides.

**"Change."**—Same movements, lunging with the right foot forward. Right arm up, and left arm down (Fig. 72).

**"Change."**—Same movements alternately. .

**"Halt"**

Repeat each 4 times.

### EXERCISE 16

*Forward Lunge. Turns. Double Time.*

**"Begin."**—1. Bells to chest.

3. Bells upward, and left forward lunge (Fig. 73).

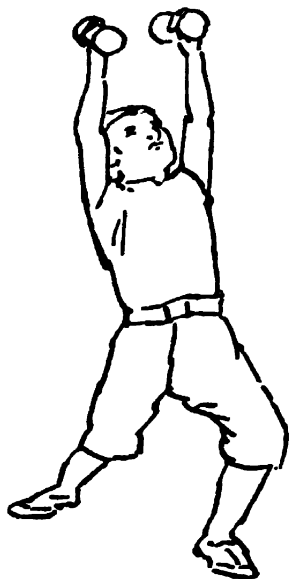


FIG. 73.



FIG. 74.

5. Bells to chest, and left foot back with the hollow against the heel of the right (Fig. 74).

7. Bells to sides, simultaneously turning the body to the left.

**"Change."**—Same exercise, lunging with right foot.

**"Halt "**

Repeat 4 times.

. *Note.*—Look up at the bells when lunging. The arms must go straight up (the tendency is to send them obliquely forward).

### EXERCISE 17

*Forward Lunge. Hip Movements. Double Time.*

**"Begin."**—1. Tap bells overhead (sideways). Palms front.  
Left forward lunge (Fig. 75).

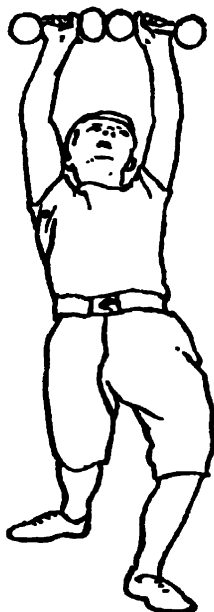


FIG. 75.

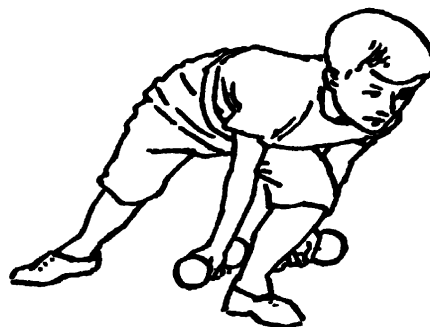


FIG. 76.

3. Tap bells beneath the left thigh. Palms front (Fig. 76).
5. Tap bells overhead, and return to position 1.
7. Bells to sides. Left foot up to right.



**"Change."**—Same movements, with right forward lunge.

**"Change."**—Same movements alternately.

**"Halt"**

Repeat each 4 times.

*Note.*—In bending forward, the chest should come down nearly to the thigh.  
Look at the bells when tapping overhead.

### EXERCISE 18

*Side Lunges. Straight Arms. Double Time.*

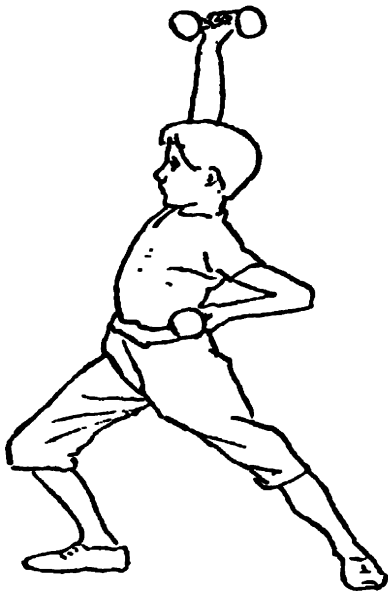


FIG. 77.

**"Swing."**—1. Right bell overhead, left bell on hip, and right sideways lunge (Fig. 77).

3. Position of Attention.

**"Change."**—Same movements to the left.

**"Change."**—Same alternately.

**"Change."**—Same movements in pairs  
—sides (see note).

**"Change."**—Same movements in pairs  
—centre (see note).

**"Change."**—Same movements, alternate  
pairs—sides and centre.

**"Halt"**

Repeat 3 times.

*Note.*—Children look in front in this exercise and *not* at bell.

**"Pairs sides."**—Ones and twos lunge towards each other; threes and fours do the same.

**"Pairs centre."**—Twos and threes lunge towards each other; ones and fours lunge outward.

See that both arms are dropped to the sides at No. 3.

EXERCISE 19

*Side Lunge. Body Turning. Double Time.*

- "Begin."**—1. Bells to chest, and left sideways lunge (Fig. 78).  
 3. Bells forward.  
 5. Keep arms and legs firm, and turn the body from waist to the front (Fig. 79).  
 7. Position of Attention.

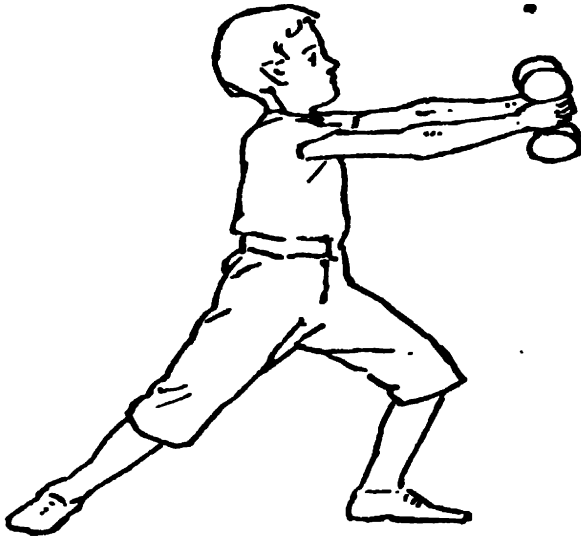


FIG. 78.

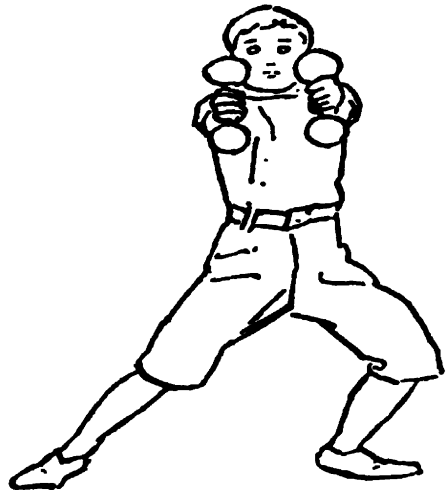


FIG. 79.

- "Change."**—Same movements, lunging to the right.  
**"Change."**—Same movements alternately.

**"Halt"**

Repeat 4 times.

*Note.*—In No. 5, while turning the body, keep the arms parallel

## EXERCISE 20

*Forward Lunge. Backward Movement.*

- "Swing."**—1. Left bell forward to obliquely upward. Right bell backward. Left forward lunge (see p. 107, fig. 71).  
3. Bring the right bell forward to obliquely upward; then both bells overhead, and

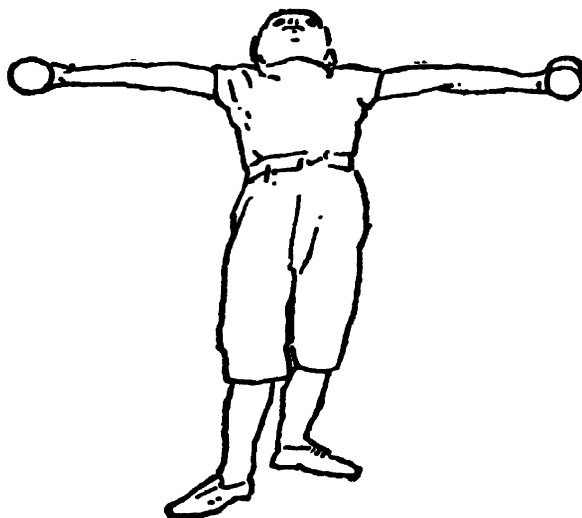


FIG. 80.

down backwards to level of shoulders; at the same time step backward with the left foot, and lean body backward (Fig. 80).

5. Tap bells overhead, and left forward lunge.  
7. Position of Attention.

**"Change."**—Same, with right forward lunge.

**"Change."**—Same alternately.

**"Halt"**

Repeat 3 times.

## IX

### STAVES

STAVES are cheap, and should form part of the apparatus for physical exercise in every school. They should be made of beech, and for the upper standards should be 4 feet in length and  $\frac{7}{8}$  inch thick; but for infants and young children a stave 3 feet 6 inches long and  $\frac{3}{4}$  inch thick is large enough. They may be had plain or polished, at 2s. 6d. per dozen for the larger size (plain), and 2s. 3d. per dozen for the smaller. If polished the charge is 1s. per dozen extra.

**Position of Attention.**—Carry the stave in the right hand between the thumb and first finger, and hold it so that the bottom of it is on a level with the knee. The top will be just above the head. The hands and arms (excepting the necessity for grasping the stave) will be in the usual position of attention (Fig. 81).

In opening the front 4 to double arm's distance, the stave should be raised together with the right arm, and rest horizontally along the arm and back of shoulders.

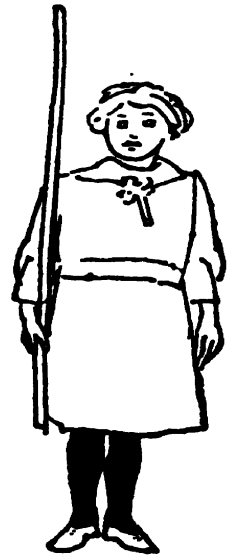


FIG. 81.

### Preparation for Exercise

Cautionary command—" *Staves down.*"

Executory commands—" *One—Two—Three.*"

These movements *follow* the number.

At "*One*" grasp the stave just in front of the face with the left hand—palm front (Fig. 82).

At "*Two*" bring it down in front of the body, with arms straight and stave parallel to the ground (Fig. 83).

At "*Three*" slide the hands along the stave until they touch sides of body (Fig. 84).

All the exercises commence either from this position (known

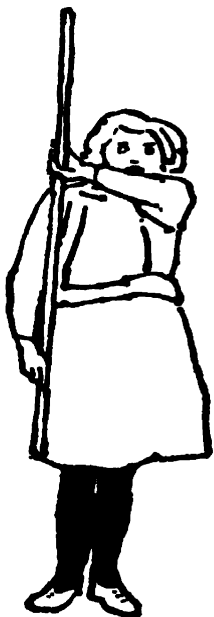


FIG. 82.

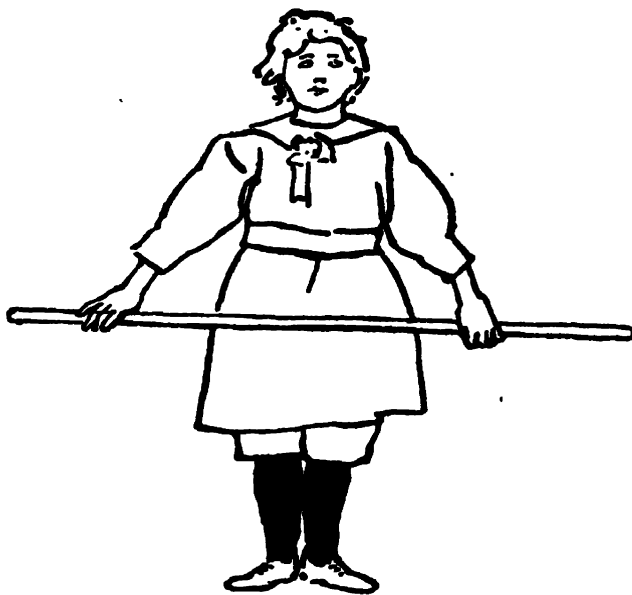


FIG. 83.

as *narrow grasp*), or with hands stretched out nearly to the end of the stave (known as *wide grasp*) (Fig. 85). When the exercise is worked from the latter position, the teacher after bringing staves down by the three movements described, must give command "*Wide grasp.*" To place staves in position again the above commands should be reversed.

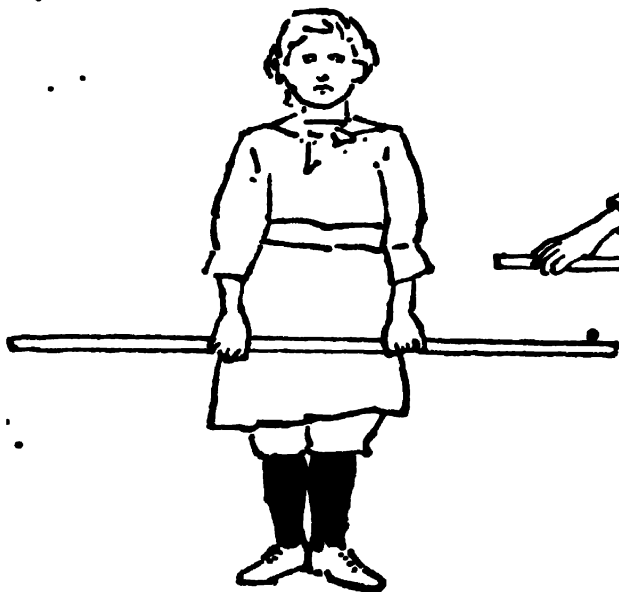
Cautionary command—" *Staves up.*"

Executory commands—" *One—Two—Three.*"

At "*One*" move hands a little along the stave.

At "*Two*" with the left hand raise the stave smartly into position.

At "*Three*" bring the left hand to side.



• FIG. 84.

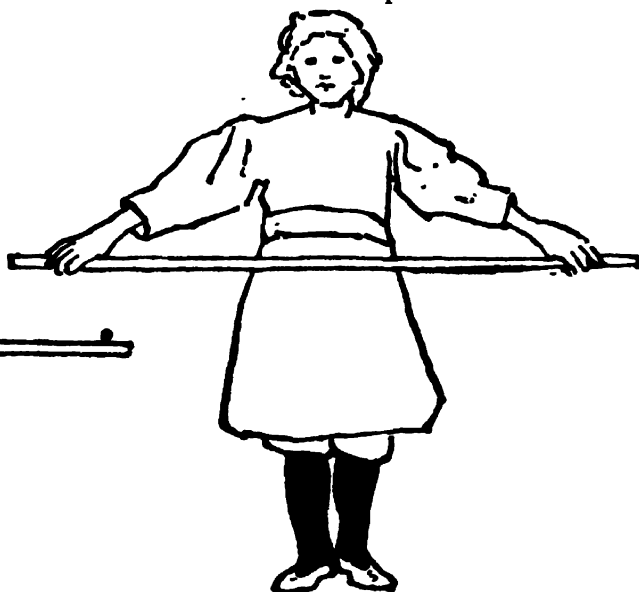


FIG. 85.

If the exercise has been worked with *wide grasp* the command "*Narrow grasp*" must be given before the above.

### EXERCISE 1

*First part with bent, and the second with straight arms*

**"Begin."**—1. Staves to chest (Fig. 86).

2. Staves down (Fig. 84).

3. Staves to chest.

4. Staves down.

**"Change."**—1. Staves to chest.

2. Staves forward (Fig. 87).

3. " "

4. Staves down.

**"Change."**—1. " "

2. Staves upward (Fig. 88).

3. " "

4. Staves down.

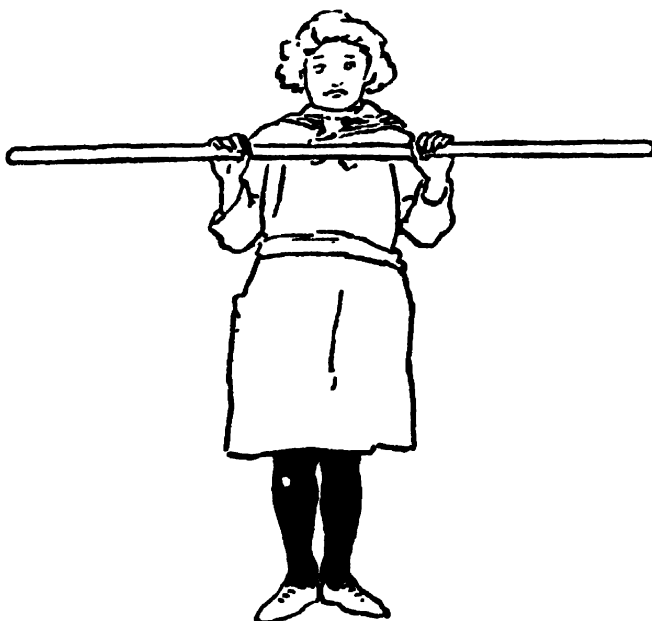


FIG. 86.

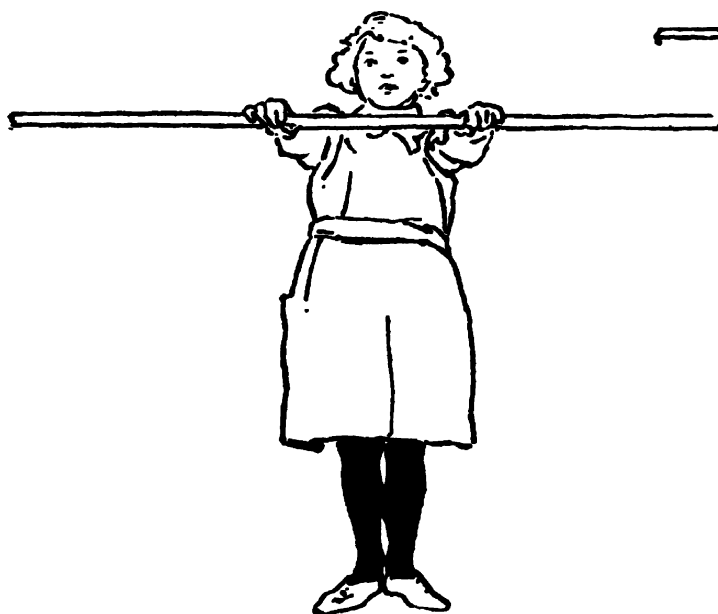


FIG. 87.

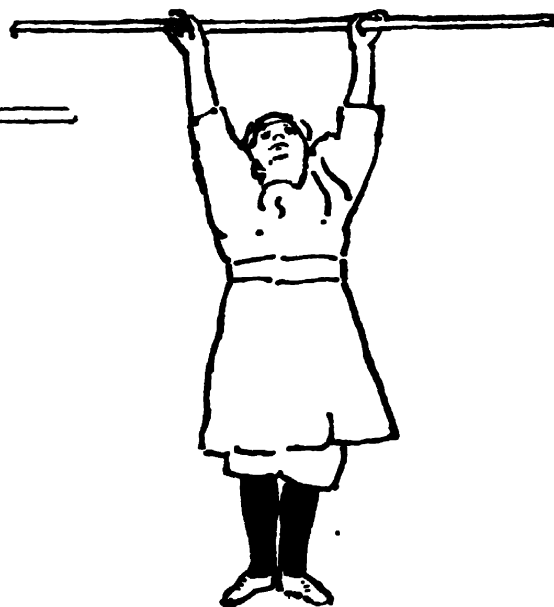


FIG. 88.

**“Change—Swing.”**—1. Staves forward. 2. Staves down  
(with straight arms). 3 and 4. Repeat.







2. Right hands under left arms—staves pointing forward (Fig. 92).

3. Staves forward.

4. Staves down.

**"Change."**—1. Staves forward.

2. Staves perpendicular at left side, bringing

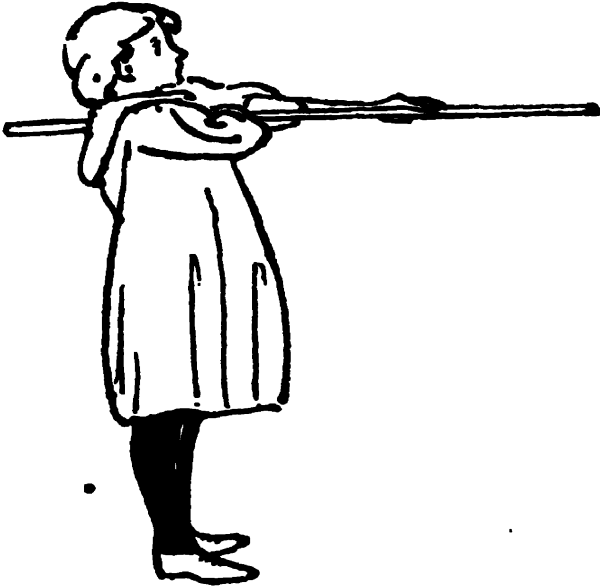


FIG. 92.



FIG. 93.

right hand to left side, and stretching left hand upward (Fig. 93).

3. Staves forward.

4. Staves down.

**"Change."**—1. Staves forward.

2. Staves perpendicular at right side, bringing left hand to right side, and stretching right hand upward.

3. Staves forward.

4. Staves down.

**"Halt "**

Repeat each 4 times.

## EXERCISE 3

*Straight Arms. Body Movements. Double Time*

**"Swing."**—1. Staves overhead and look upwards (see p. 116, fig. 88).

3. Bend forward and look in front towards the stave (Fig. 94).

5. Straighten body—staves overhead.

7. Staves down.

**"Change."**—1. Staves overhead, and step backward with the *left* foot.



FIG. 94.



FIG. 95.

3. Bend body backward and look upwards (Fig. 95).

5. Straighten body.

7. Staves down and feet to attention.

**"Change."**—Same movements stepping back with *right* foot.

**"Change."**—1. Staves overhead.

3. Bend body sideways to left from waist (Fig. 96).

5. Straighten body.

7. Staves down.

**"Change."**—Same movements bending to right (Fig. 97).

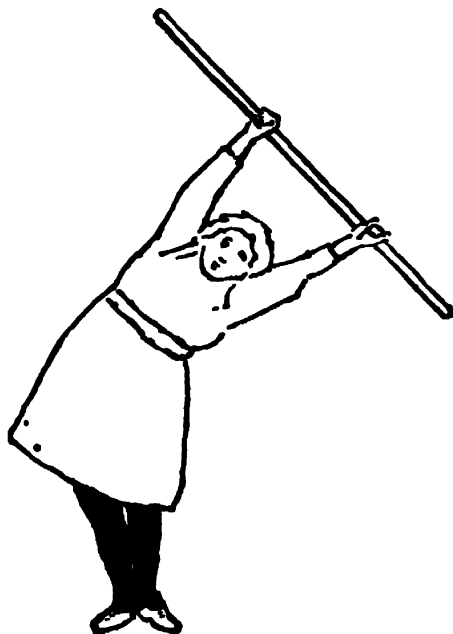


FIG. 96.

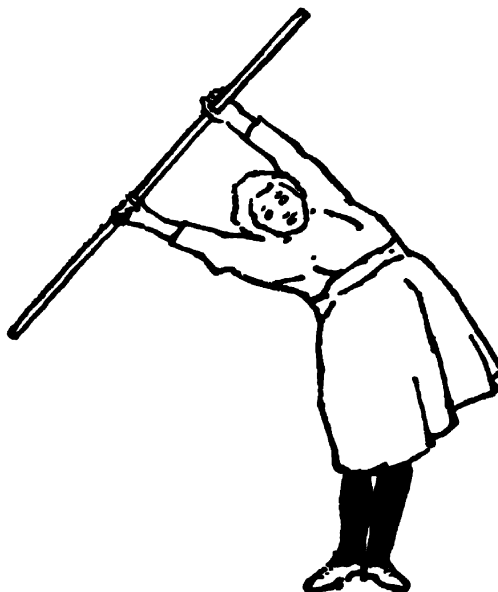


FIG. 97.



FIG. 98.

**"Change."**—Same movements turning the body to right (Fig. 98).

**"Change."**—Same movements turning the body to left.

**"Halt"**

Repeat 3 times.

*Note.*—In the side-bendings try to get the staves in parallel lines.  
In the turnings get them in straight lines.

#### EXERCISE 4

##### *Straight Arms*

**"Wide Grasp."**—This command should be given after bringing staves down (see p. 115, fig. 85).

- "Swing."**—1. Staves forward (Fig. 99).  
 2. Staves overhead.  
 3. Staves behind—level with shoulders (Fig. 100).

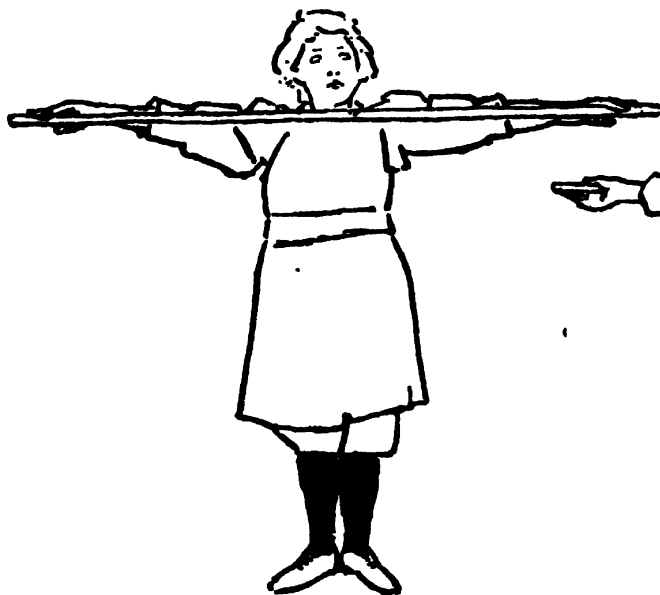


FIG. 99.



FIG. 100.

4. Staves down behind (Fig. 101).  
 5. Staves back to position 3.  
 6.       "                       "       2.  
 7.       "                       "       1.  
 8. Staves down in front.
- "Change."**—1. Staves overhead.   2. Staves down behind.  
 3.       "                       "       4. Staves down in front.
- "Change."**—1. Staves overhead (Fig. 102).  
 2. Drop left arm down behind, and bring right arm to the side of the head (staves are perpendicular at the back) (Fig. 103).  
 3. Staves overhead.  
 4. Staves down.

**"Change."**—Same movements, dropping right arm down behind.

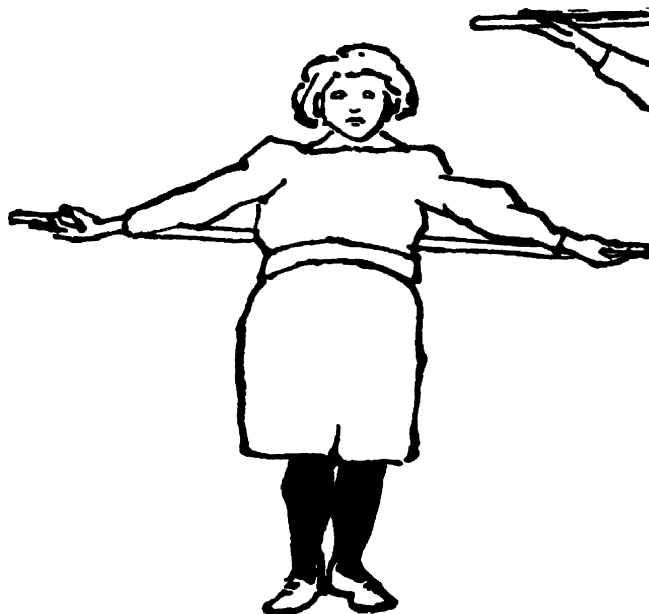


FIG. 101.



FIG. 102.



FIG. 103.

**"Halt"**

Repeat 4 times.

### EXERCISE 5

*Straight Arms. Circles. Wide Grasp*

- Swing.**—1. Staves over left shoulders to perpendicular behind; left arm down; right arm up (Fig. 103).  
 2. Staves down behind, parallel to the ground by dropping right arm (Fig. 101).  
 3. Staves return to position 1, by raising right arm.

4. Return staves over the left shoulders and down in front.

**"Change."**—1. Staves over right shoulders to perpendicular behind ; right arm down ; left arm up.

2. Staves down behind, parallel to the ground, by dropping left arm.

3. Staves return to position 1, by raising left arm.

4. Return staves over the right shoulders and down in front.

**"Change."**—1. Staves over left shoulders to perpendicular behind ; left arm down ; right arm up.

2. Staves down behind, parallel to ground, by dropping right arm.

3. Staves perpendicular behind by raising *left* arm.

4. Return staves over right shoulders to down in front.

**"Change."**—Same movements commencing over right shoulder and finishing over the left.

**"Halt"**

Repeat 3 times.

*Note.*—In the first two parts half circles are made ; in the last two, full circles.  
Keep the arms perfectly straight throughout the exercise.

## EXERCISE 6

*Forward Lunges.    Straight Arms.    Wide Grasp*

**"Swing."**—1. Staves overhead.

2. Staves down behind.    Left forward lunge  
(Fig. 104).

3. Staves overhead.    Feet at attention.

4. Staves down.

**"Change."**—Same movements with the right forward lunge (Fig. 105).

**"Change."**—Same movements alternately.



FIG. 104.



FIG. 105.

**"Halt"**

Repeat 4 times.

*Note.*—Practise the lunge movements as shown on p. 83.

## EXERCISE 7

*Forward Lunges. Straight Arms. Narrow Grasp*

- "Swing."**—1. Staves forward. Step forward with the left foot about 12 inches, resting the toes on the ground (Fig. 106).  
 2. Staves overhead. Left forward lunge (Fig. 107).  
 3. Back to position 1.  
 4. Staves down in front.



**"Change."**—Same movements with the right foot advancing, and right forward lunge.

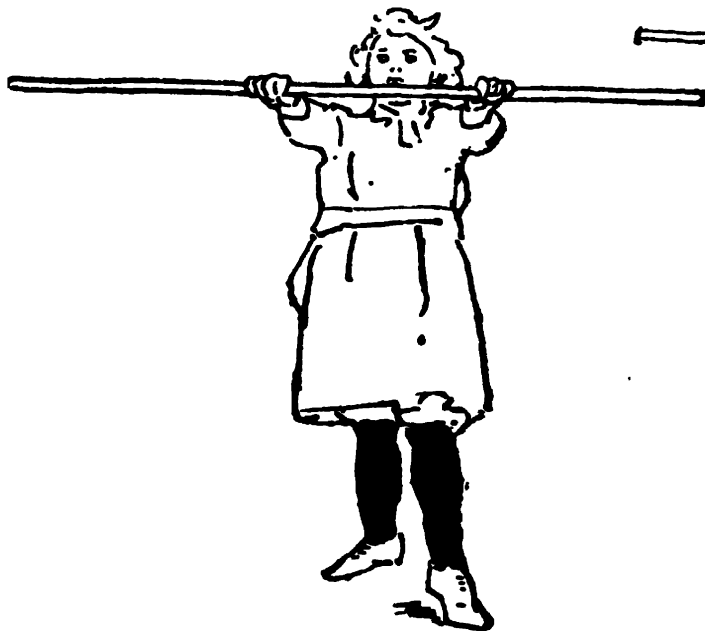


FIG. 106.



FIG. 107.

**"Change."**—Same movements alternately.

**"Halt"**

Repeat 4 times.

### EXERCISE 8

*Side Lunges. Straight Arms. Wide Grasp*

- "Swing."**—
1. Staves overhead.
  2. Staves perpendicular behind, by dropping the right arm. Left sideways lunge (Fig. 108).
  3. Staves overhead. Feet to attention (position 1).
  4. Staves down in front.

**'Change.'**—Same movements, dropping left arm, with right sideways lunge (Fig. 109).



FIG. 108.

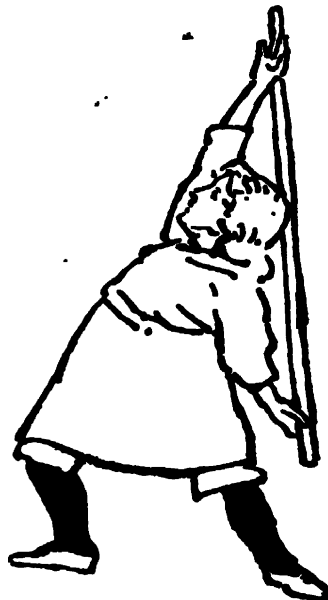


FIG. 109.

**"Change."**—Same movements alternately.

**"Halt"**

Repeat 4 times.

*Note.*—Remember to drop the right arm when lunging to the left, and *vice versa*. Practise the side lunge as shown on p. 83.

## EXERCISE 9

*Side Lunges in Pairs. Straight Arms. Wide Grasp*

**"Swing."**—The same movements as in Exercise 8, but Nos. 1 and 2, and Nos. 3 and 4 respectively, lunge towards each other.

**"Change."**—The central pairs (2 and 3) now lunge toward each other, while the outer children (1 and 4) lunge outwards.

**"Change."**—Alternate the above movements.

**"Halt "**

Repeat 4 times.

*Note.*—In the first part the pairs are at the sides; in the second they are in the centre.

In the alternate movements the pairs are first at the sides, and then in the centre.

### EXERCISE 10

*Narrow Grasp. Double Time*

**"Begin."**—1. Staves sideways left, by bringing right arm across the chest, and stretching left arm out

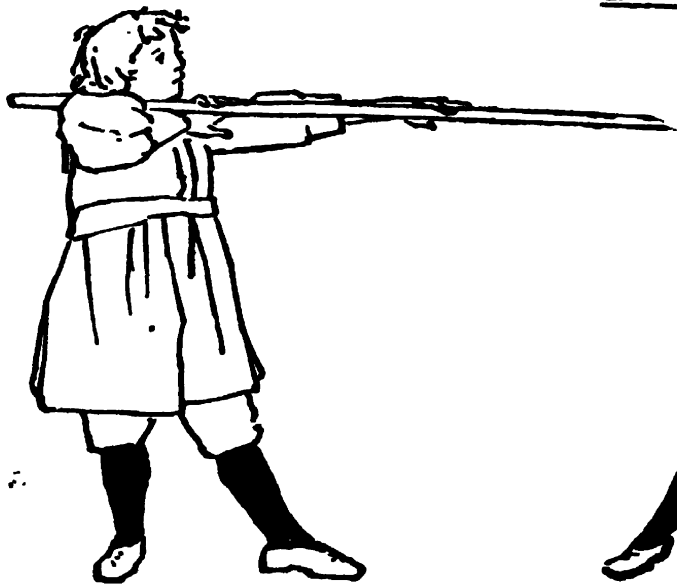


FIG. 110.

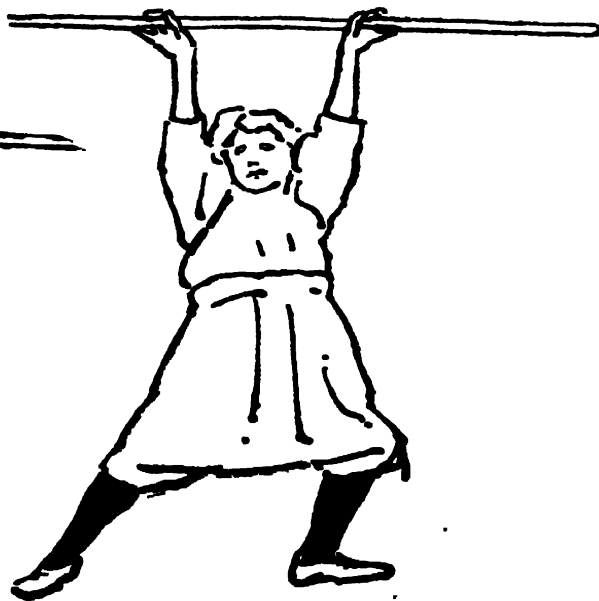


FIG. 111.

to left, staves parallel to the ground, and held at the height of the shoulder. At

same time step sideways with the left foot, about 12 inches (Fig. 110).

3. Staves overhead, and left sideways lunge, keeping body to the front (Fig. 111).

5. Back to position 1.

7. Staves down. Feet to attention.

**"Change."**—Same movements to right.

**"Halt "**

Repeat 4 times.

# EXERCISE 11

*Narrow Grasp. Double Time*

**"Swing."**—1. Staves forward. Step forward with left foot, resting on toes (see p. 126, fig. 106).

3. Staves perpendicular at right side of body, by bringing left hand to right side, and stretching right arm upwards. Step backward with left foot (Fig. 112).

5. Back to position 1.

7. Staves down. Feet to attention.

**"Change."**—Same movements with staves perpendicular at left side of body, and right foot first forward, and then backward.



FIG. 112.

**"Halt "**

Repeat 4 times.

## EXERCISE 12

*Narrow Grasp. Double Time*

**"Swing."**—1. Staves overhead. Bend body to left. Right foot sideways, resting on the toes (Fig. 113).

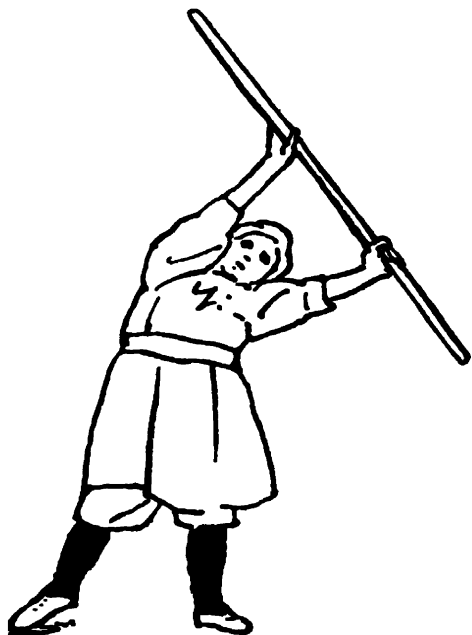


FIG. 113.

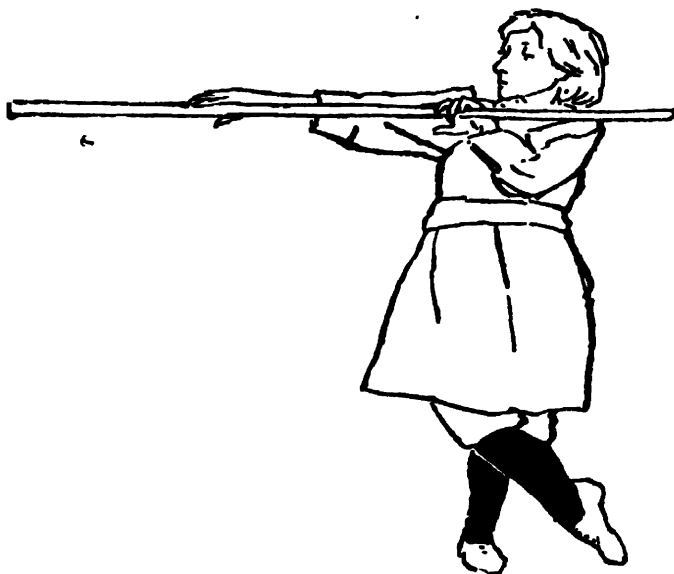


FIG. 114.

3. Bring staves across the body to right side, with right arm sideways, left arm across the chest, and right leg crossing over the left (Fig. 114).

5. Back to position 1.

7. Staves down. Feet to attention.

**"Change."**—Same movements, bending to right.

**"Halt"**

Repeat 4 times.

EXERCISE 13 .

- "Swing."**—1. Right arm across the chest, stave thrust backward, and step backward with left foot (Fig. 115).  
3. Stave obliquely upwards, with end of stave

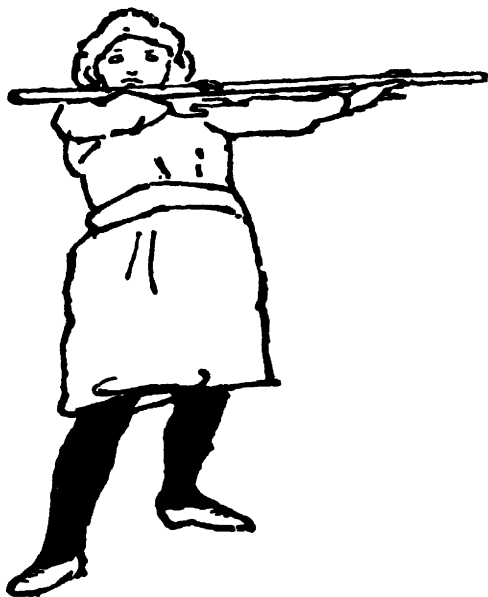


FIG. 115.



FIG. 116.



FIG. 117.

nearly on the chest, and left forward lunge (Fig. 116).

5. Stave to back of the neck, turn to the right, and bring feet to attention (Fig. 117).

7. Staves down.

**"Change."**—Same movements, but stepping backward with the right foot, and right forward lunge.

**"Halt"**

Repeat 4 times, and thus complete a circle.

## EXERCISE 14

- "Swing."**—1. Staves obliquely forward, end of stave nearly on the chest, and left sideways lunge (Fig. 118).  
3. Staves over the right shoulder to perpendicular



FIG. 118



FIG. 119.

behind, right arm down, and step backward with the left foot (Fig. 119).

5. Return to position 1.

7. Staves down and feet together at attention.

**"Change."**—Same movements lunging to right side.

**"Halt"**

Repeat 4 times.

EXERCISE 15

- "Swing."**—1. Staves overhead, and step backward with the left foot.  
 3. Staves at back of the neck, and kneel on left knee (Fig. 120).  
 5. Back to position 1.  
 7. Staves down, and feet together at attention.



FIG. 120.

**"Change."**—Same movements, stepping back with the right foot.

**"Halt"**

Repeat 4 times.



## X

### INDIAN CLUBS

CLUBS for school use should be of polished beech (or birch), 22 inches long,  $2\frac{5}{8}$  inches diameter at the thick end. This is the size adapted for Standards VI. and VII.

Exercises with Indian Clubs are very graceful and useful, but more difficult to teach, and still more difficult to explain, and it will be of great advantage to the teacher to have had previous lessons from a gymnastic instructor, or some person skilled in the use of clubs.

In the exercises hitherto described, each movement is entirely separate and distinct from the others, while in club exercises the movements follow on in an easy and graceful manner. Each of the various movements should be learnt and mastered before proceeding to the next; and then the exercise should be proceeded with and carried through without stopping.

If the clubs are held tightly in the hand there is great strain on the wrist, and the exercises are very difficult to perform. It is sufficient to grip them firmly with the thumb, and bottom of the first finger, and only quite lightly with the other part of the hand. As the exercises are tiring at first, they must be proceeded with slowly.

For club exercises plenty of room is required. Arrange the class in the centre of yard or school. Number in threes, and wheel out with twos as pivots. (*See diagram for wheeling in*

*threes, on p. 63.*) Extend to double arm's and club's distance, if space permits. If this is not practicable, extend to double arm's distance, and allow the ends of the clubs to overlap; in which case the twos should take two paces backward.

Position of clubs at attention (Fig. 121).

Position of clubs in marching (Fig. 122).

Position of clubs at "carry" (Fig. 123).

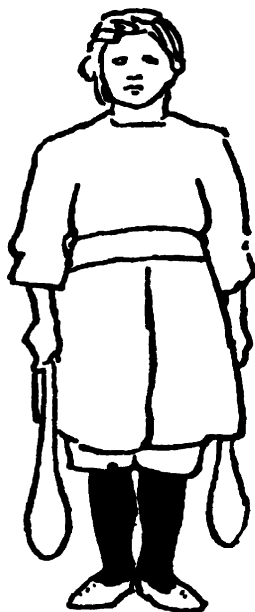


FIG. 121.

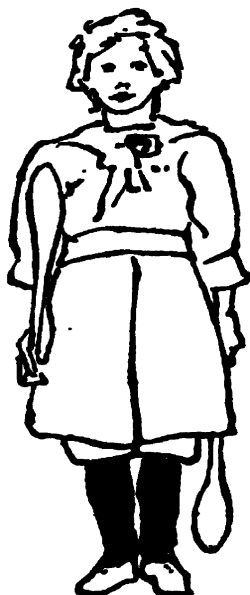


FIG. 122.



FIG. 123.

The Exercises begin from the position *carry*, with the left foot astride about 15 inches.

**"Outward Front Circle—Left Arm"** (Fig. 124).—Stand firmly on the feet with shoulders square to the front, and head erect.

**"Left Club—Carry."**—From this position thrust the left arm obliquely upwards, with club in a line with arm. Keep the arm straight, and describe a circle in front of the body, and stop at the starting position. Repeat this 4 times.

Then perform the circle several times without stopping, and halt at command, "*Carry.*"

**"Outward Front Circle—Right Arm."**—To be taught in the same way (Fig. 125).

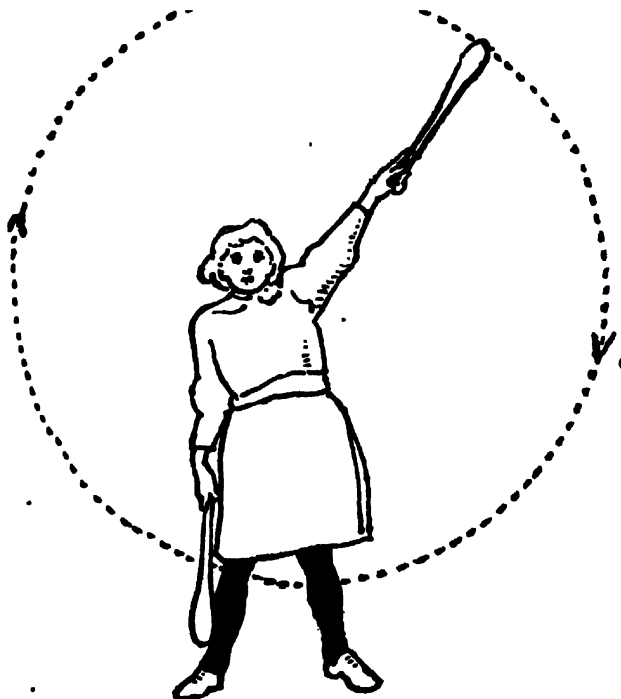


FIG. 124.

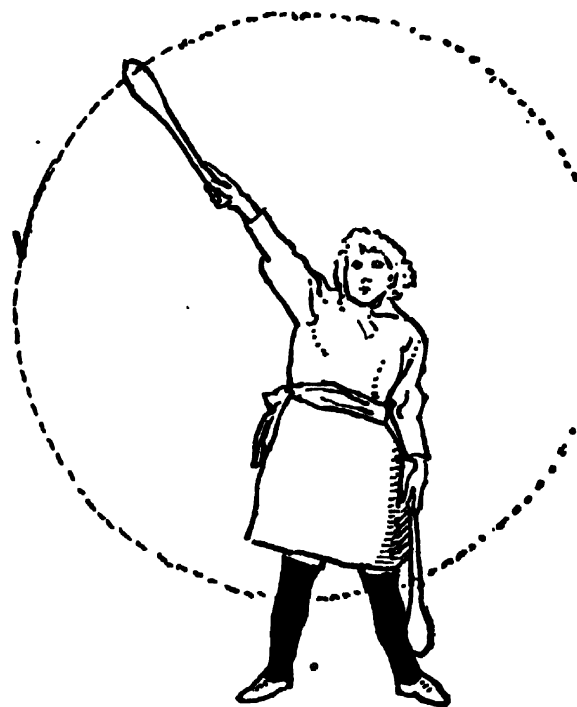


FIG. 125.

*Note.*—The club must not be held tightly, or it will lean back, instead of keeping in line with the arm.

In starting the circle, the palm of the hand is in front. At  $\frac{1}{4}$  the distance it is downwards; at  $\frac{1}{2}$  way it is inwards; at  $\frac{3}{4}$  it is downwards again; and at the completion of the circle it is front again.

The shoulder must be kept square to the front or the circle will incline backwards; the body must be kept firm or the children will strike their legs or feet; and the head must be kept erect.

### **Inward Front Circle—Left Arm (Fig. 126)**

<sup>1</sup> From position, "*Left Club—Carry.*" Bring the left arm across the chest to the right side, the club in line with the arm.

Commencing downwards, describe a circle in front of the body. When this has been learnt, pass on next to

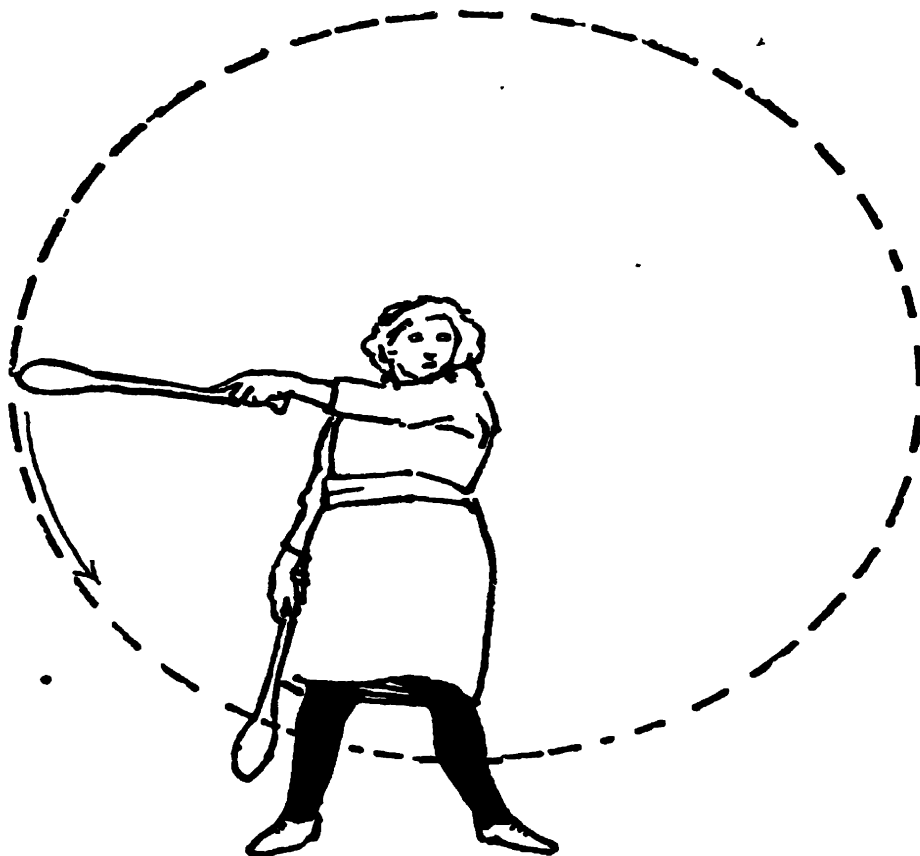


FIG 126.

### **Inward Front Circle—Right Arm (Fig. 127)**

Now practise in the following manner without a halt :

- (a) Outward front circle—left arm (repeat 4 times).
- (b) Inward front circle—left arm                    „            „
- (c) Outward front circle—right arm                „            „
- (d) Inward front circle—right arm                 „            „

*Note.*—Count four as in previous exercises (one to each circle), giving the number at the downward part of the movement. Give the order, "Change," at No. 3 as usual, and on reaching the starting position of *inward front circle—left*, commence that movement.

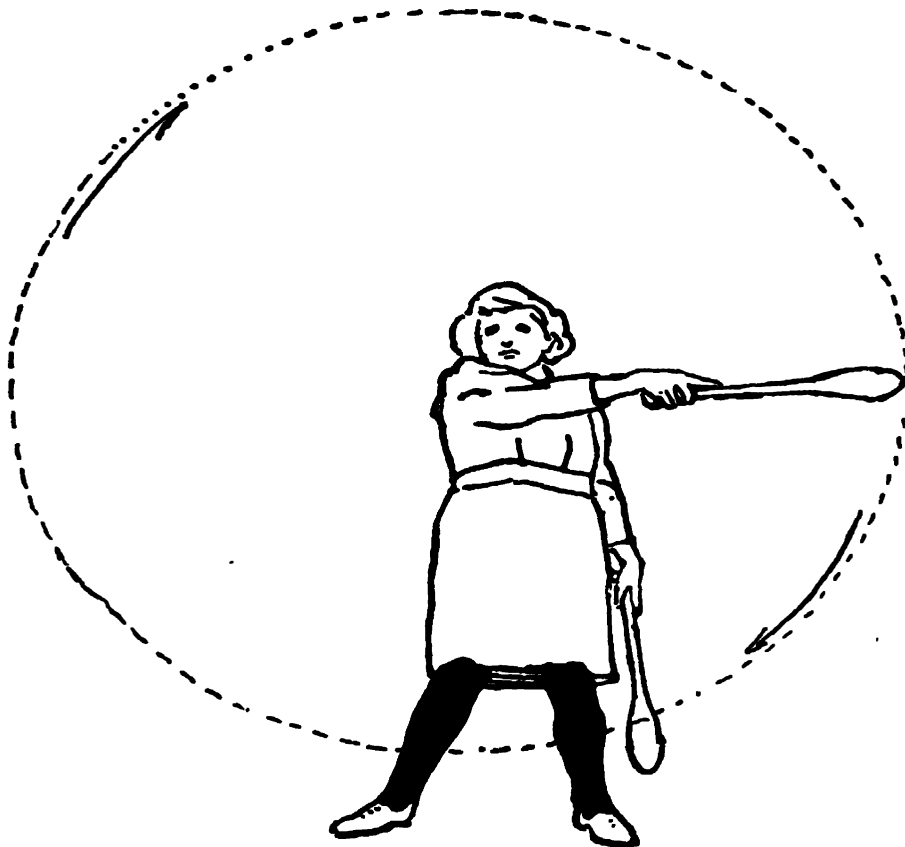


FIG. 127.

When changing from second to third part (*i.e.* from *inward front circle—left*), raise the right arm sideways and commence the movement as the left arm is finishing.

The left arm must be brought to the *side*, and *not* to position "Carry."

Before proceeding further practise turning from left to right with both clubs at position "Carry."

Turn the body to the left, and raise the right heel (Fig. 128);

and then turn the body to the right, at the same time dropping the right heel and raising the left.

**Front Swings—Both Arms.** (*From left to right and from right to left*).—From position “*Carry*” turn the body to the left, and



FIG. 128.

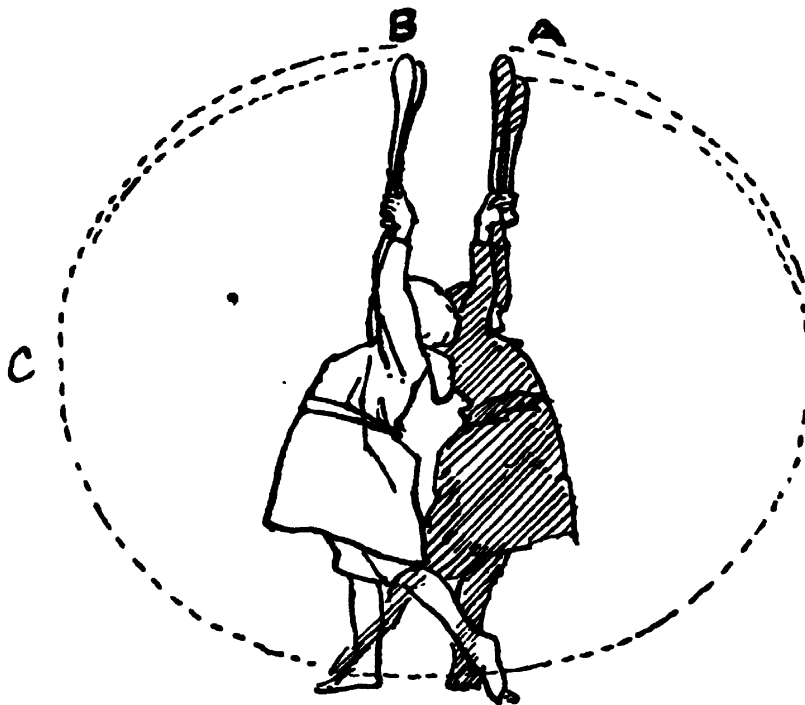


FIG. 129.

thrust the arms upwards, the clubs being in a line with arms. Keep the arms parallel, and swing them first downwards and then upwards, at the same time turning the body from left to right. Then, in a similar manner, swing the clubs from right to left (Fig. 129).

*Note.*—Look at clubs before starting, and see that the arms and clubs are perpendicular at completion of each swing. Give plenty of time for these swings to be carried out, and mind there is no stooping.

**Continuous Front Swings from Left to Right.**—Commence as in the swings just described, but when the clubs reach point B in Fig. 129 keep them still overhead, and turn the body

round again to left which will bring the clubs once more to point A, ready to continue the swing. Count "*One*" for the swing from A to B; and "*Two*" while turning the body round to position A. Repeat 3 and 4.

**Continuous Front Swings from Right to Left** are done in the same manner, commencing from point B.

In order to change from one continuous swing to the other—

At 1 swing from A to B.

At 2 turn body from B to A.

At 3 turn body *back again* from A to B.

Rest at 4 and commence the swing from right to left at 1, etc. etc.

The swings and continuous swings should now be practised together.

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**Outward Front Circle—Left and Right Together.—**

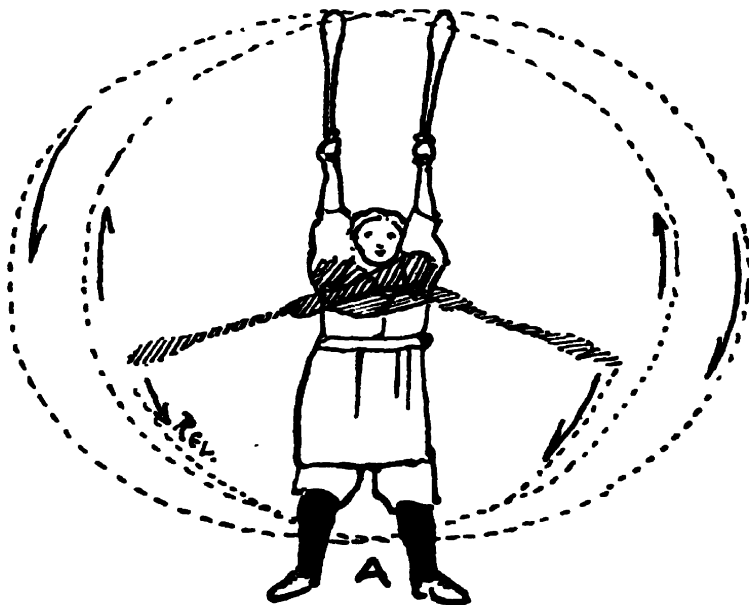


FIG. 130.

*These have been taught separately, and a study of the figure*

will show how they are done together. As the clubs cross or pass each other at point A the right one is nearest to the body (Fig. 130).

**Inward Front Circle—Left and Right Together—**(Fig. 130).—Give the command "*Change*" while the outward circles are being done, and that exercise will stop with arms crossed in front of the chest, as shown in the figure. From that position begin in the opposite direction with the inward front circles.

*Note.*—Keep the body firm, with the head erect. .

The clubs are sure to catch at first, but this is soon overcome by practice.

If a club is dropped, never allow it to be picked up while the exercise is proceeding. ●

### EXERCISE 1 (*combining the above movements*)

"*Left Foot Astride—Place*" (about 15 inches apart).

"*Left Club—Carry.*"

"**Swing.**"—Outward front circle (left arm).

"**Change.**"—Inward front circle (left arm).

"**Change.**"—Outward front circle (right arm).

"**Change.**"—Inward front circle (right arm).

(*As the last inward circle is made, raise the left arm sideways overhead to meet the right arm, at the same time turning the body to the left and then follow on to next movement.*)

"**Change.**"—Front swings—both arms—from left to right, and right to left.

"**Change.**"—Front swings—both arms—continuous from left to right.

"**Change.**"—Front swings—both arms—continuous from right to left.

(*The body is turned to the right with clubs overhead ; so the*



*command "Front" must be given in addition to that of "Change" before going on to outward front circles.)*

**"Change—Front."**—Outward front circles—left and right arms together.

**"Change."**—Inward front circles—left and right arms together.

**"Halt." "Carry." "Attention"**

When any of the previous movements are repeated in succeeding exercises the teacher can refer back for explanation.

Two new movements are introduced in Exercise 2.

A. Drop clubs over the shoulders down the back and hold them parallel to each other (Fig. 131). Practise this movement with the following:—

- (a) Front swings with both arms—left to right; and then drop clubs behind the shoulders.
- (b) Repeat from right to left.

Let arms and clubs be carried up to

their full vertical height on right side before dropping them down behind shoulder.

In dropping clubs bring the hands down on each side of the head, elbows out and well back, and the chest forward.



FIG. 131.

**B. Twists.**—A twist is a small circle described with a club by moving the wrist only. The twists are made outward or inward and with the arms in various positions. A twist is *outward* when it is directed away from the body; and *inwards* when towards the body.

**Outward Twist.**—At position “*Carry*,” hold clubs firmly between thumb and bottom of the first finger, and lightly with the other part of the hand. With a movement of the wrist, make each club (falling forward) describe a circle (Fig. 132). The



FIG. 132.



FIG. 133.

arms must not move. Keep club close to the arm, so that the end of it, in circling, nearly touches the elbow. Use pressure with the finger-ends to get the club round. Persuade scholars to practise this with a round stick until the movement is acquired.

**Inward Twist.**—The inward twist should be taught from the same position as the outward twist. Both twists should afterwards be practised with arms forward—clubs upright (Fig. 133); and with arms sideways—clubs upright.

Now practise the twists with the following movements:—

**"Clubs Carry."**—Turn body to the left.

1. Outward twist.
2. Outward twist. (*The twist is repeated to preserve the rhythm.*)
3. Front swings—left to right.
4. Drop clubs behind shoulders.
5. Outward twist.
6. Outward twist.
7. Front swing—right to left.
8. Drop clubs behind shoulders.

## EXERCISE 2

*(Twists and Swings)*

**"Left Foot Astride—Place." "Both Clubs—Carry"**

- "Swing."**—
1. Front swing—both arms from left to right.
  2. Drop clubs behind shoulders.
  3. Front swing—from right to left.
  4. Drop clubs behind shoulders.

- "Change."**—
1. Outward twist on left side; with clubs at position "Carry," as in Fig. 132.
  2. Repeat.
  3. Front swing—from left to right.
  4. Drop clubs behind shoulders.
  5. Outward Twist on right side, with clubs at position "Carry."
  6. Repeat.
  7. Front swing—from right to left.
  8. Drop clubs behind shoulders.

**"Halt." "Carry." "Attention"**

EXERCISE 3

**"Left foot Astride—Place." "Both Clubs—Carry."**

**"Swing."**—1. Front swing with both arms—from left to right.

*(A similar movement to the continuous swings from left to right, with clubs over the shoulders, instead of overhead.)*

2. Drop clubs behind shoulders, and turn body to the left.

3 and 4. Repeat.



FIG. 131.

**"Change."**—1. Front swing with both arms—from right to the left.

2. Drop clubs behind shoulders, and turn body to the left.

3 and 4. Repeat.

**"Change."**—1. Outward twist on left side; with clubs at position "Carry" (Fig. 132).

2. Half front swing—from left to right (Fig. 129 A to C).
3. Inward twist, on right side (Fig. 134).
4. Drop clubs behind shoulders.

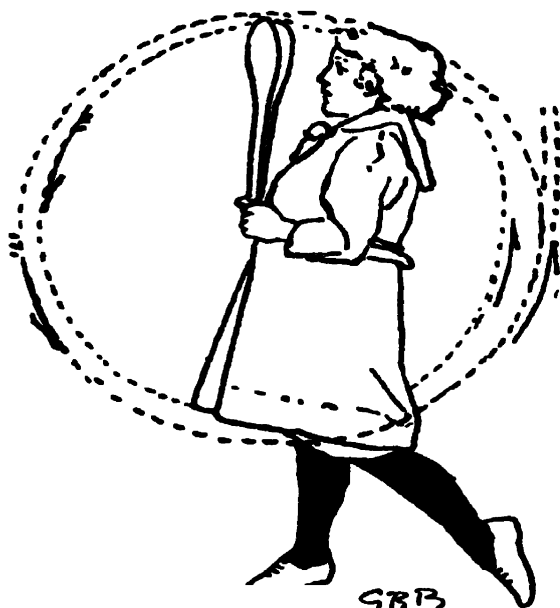


FIG. 135.

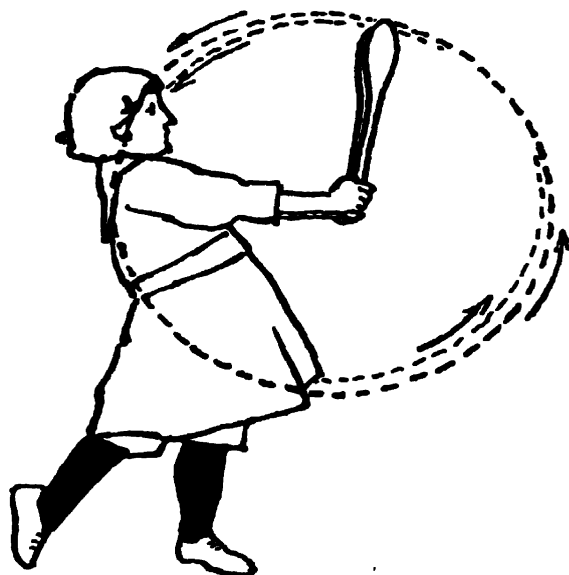


FIG. 136.

- “Change.”**—1. Outward twist, on right side (Fig. 135).  
 2. Half front swing—from right to left (Fig. 129 B to D).  
 3. Inward twist, on left side (Fig. 136).  
 4. Clubs behind shoulders.

**“Halt.”   “Carry.”   “Attention.”**

### **Twists at back of shoulders (Left and Right)**

**“Left Club—Carry.”**—Raise the left arm until the elbow is in a line with the shoulder, with forearm directed upwards and

inwards. Keep the arm steady and practise the outward twist behind the left shoulder (Fig. 137). It will take some time to acquire, but the scholars must persevere. Now raise hand and elbow a little higher, and try the inward twist. This is a little



FIG. 137.



FIG. 138.

more difficult (Fig. 138). The same twists must now be done with the right hand behind the right shoulder (Figs. 139 and 140), and then both should be practised with the first movement of the first exercise, namely, outward and inward front circles.

Thus—1. Outward twist—behind left shoulder.

2. Outward front circle with left arm, bringing club into position for another twist and so on.

Do the same with the right arm, until proficient.

Afterwards teach inward circle and inward twist—behind the shoulder. Thus :—Bring the left arm across the chest to the right side, the club in a line with the arm, and make the inward

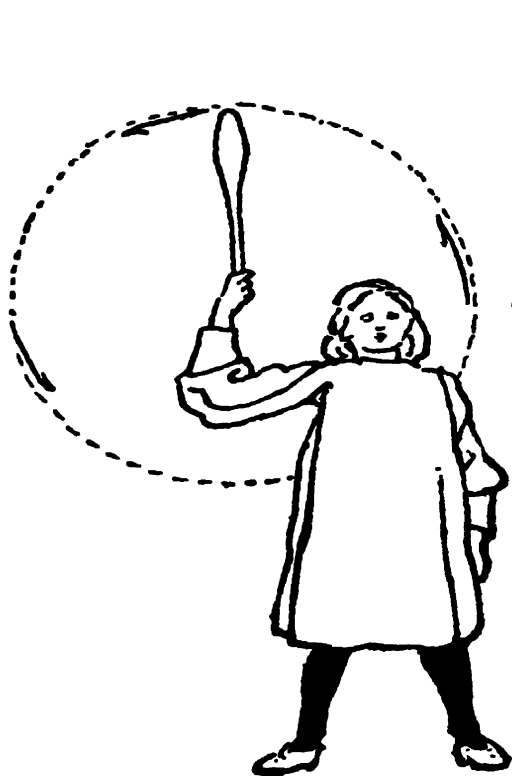


FIG. 139.

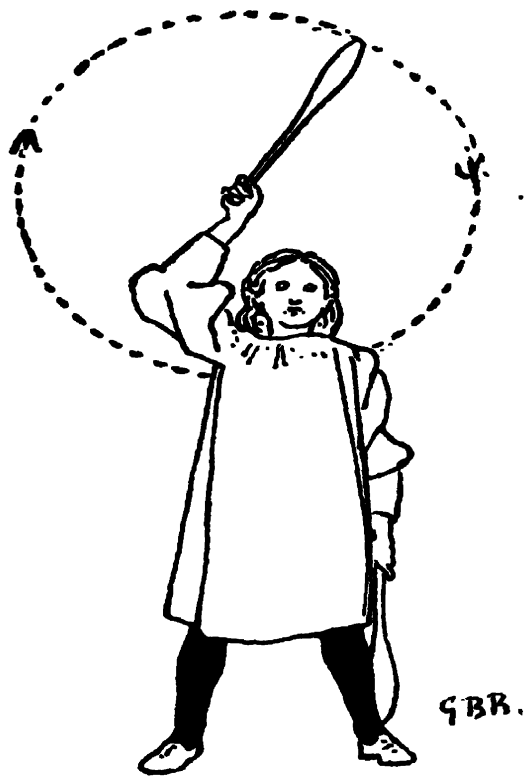


FIG. 140.

front circle, until it comes over the head. Then lower the hand and describe an inward twist behind the shoulder; and go on again to inward front circle. Teach the same movement with the right club and then proceed to Exercise 4.

EXERCISE 4

*Twists and Circles*

**“Left foot Astride—Place.” “Left Club—Carry.”**

**“Swing.”**—1. Outward twist, behind the left shoulder.  
2. Outward front circle, with left arm.  
3 and 4. Repeat.

**“Change.”**—1. Inward front circle, with left arm.  
2. Inward twist, behind the left shoulder.  
3 and 4. Repeat.

**“Change.”**—1. Outward twist, behind the right shoulder.  
2. Outward front circle, with the right arm.  
3 and 4. Repeat.

**“Change.”**—1. Inward front circle, with the right arm.  
2. Inward twist, behind the right shoulder.  
3 and 4. Repeat.

**“Change.”**—1. Outward front circles, left and right together (Fig. 130).  
2. Outward twists behind shoulders—both clubs.  
3 and 4. Repeat.

**“Change.”**—1. Inward front circles, left and right together.  
2. Inward twists behind shoulders—both clubs.  
3 and 4. Repeat.

**“Halt.” “Carry.” “Attention.”**

*Note.*—Keep the shoulders square to front throughout this exercise. Use the same method of changing from left to right-arm-movements as shown in Exercise 1.

When changing to the front circles with left and right together, raise the left arm sideways; and as the right arm finishes the back twist, thrust it out sideways, and commence front circles from that position.



## EXERCISE 5

*Lunges*

**"Attention." "Heels together." "Clubs by Sides."**

**"Swing."**—1. Arms forward to overhead, and drop clubs behind the shoulders—left forward lunge (Fig. 141).

2. Attention.

3. Arms forward to overhead, and drop clubs



FIG. 141.



FIG. 142.

behind shoulders — right forward lunge (Fig. 142).

4. Attention.

**'Change.'**—1. Same arm movements—left side lunge (Fig. 143).

2. Attention.

3. Same arm movements—right side lunge (Fig. 144).

4. Attention.



FIG. 143.



FIG. 144.

**"Halt"**

Repeat each 4 times.

*Note.*—The lunges are fully explained on page 83.  
Count double time for lunges.

## EXERCISE 6

*Straight Arms, with Clubs in a Line with Arms*

**"Attention"**

**"Begin."**—1. Arms forward.

2. Arms to sides.

3 and 4. Repeat.

**"Change."**—1. Arms sideways.

2. Arms to sides.

3 and 4. Repeat.

**"Change."**—1. Arms overhead (forward).  
2. Arms to sides.  
3 and 4. Repeat.

**"Change."**—1. Arms overhead (sideways).  
2. Arms to sides.  
3 and 4. Repeat.

**"Halt"**

Repeat 4 times.

*Note.*—This and the following exercise should be taught, in order that the children may practise similar movements to those used in dumb-bell exercises.

## EXERCISE 7

### *Straight Arms*

**"Swing."**—1. Arms sideways, with clubs in a line with arms (Fig. 145).  
2. Clubs brought to lie on forearm (Fig. 146).



FIG. 145.

3. Clubs in a line with arms.  
4. Arms overhead—clubs in line with arms.

5. Arms sideways—clubs in line with arms.
6. Clubs brought to lie on forearm.
7. Clubs in line with arms.
8. Arms to sides (rise and drop heels during this movement).

**"Change."**—1. Arms forward—clubs upright (Fig. 133).



FIG. 146.

2. Arms overhead—clubs in line with arms.
3. Drop clubs on forearm. (Keep the arms straight.)
4. Arms sideways to sides (rise and drop heels).

In doing the last movement, bring clubs in line with arms.

**"Halt"**

Repeat 2 or 3 times.

## XI

### FIGURE - MARCHING

FIGURES should not be attempted until ordinary marching can be well done. Let the scholars have some practice in counter-marching, as shown in chapter on marching (p. 54).

**Figure-March I.**—March them round until the leader is at the top of the room, and half-way across it; then on the command "**File—Centre,**" they should march down the centre of the room (Fig. 147).

**"File—Left and Right."**—The leader wheels to the left, the second to the right, the third to the left, the fourth to the right, and so on. After marching in this direction for a short distance, the two files wheel again (the one to the right and the other to the left) and march in parallel lines to the top of the room (Fig. 147).

**"Pairs—Centre."**—The two files wheel inwards; and meeting in the centre march down the room in pairs (Fig. 148).

**"Pairs—Left and Right."**—The leading pair wheel to the left, the second to the right, the third to the left, the fourth to the right, and after wheeling again, proceed in parallel lines to the top of the room (see Fig. 148).

**"Fours—Centre."**—Pairs wheel inwards, and march down centre of room in fours (Fig. 149).

*(One way of opening out for yard exercises is afforded by stopping the figure-march at this point. As the fours come*

down the centre, give the command "**Halt.**" The front four then open to double arm's distance and remain firm.  
**"Outwards—Turn."**—On this command the pairs on the

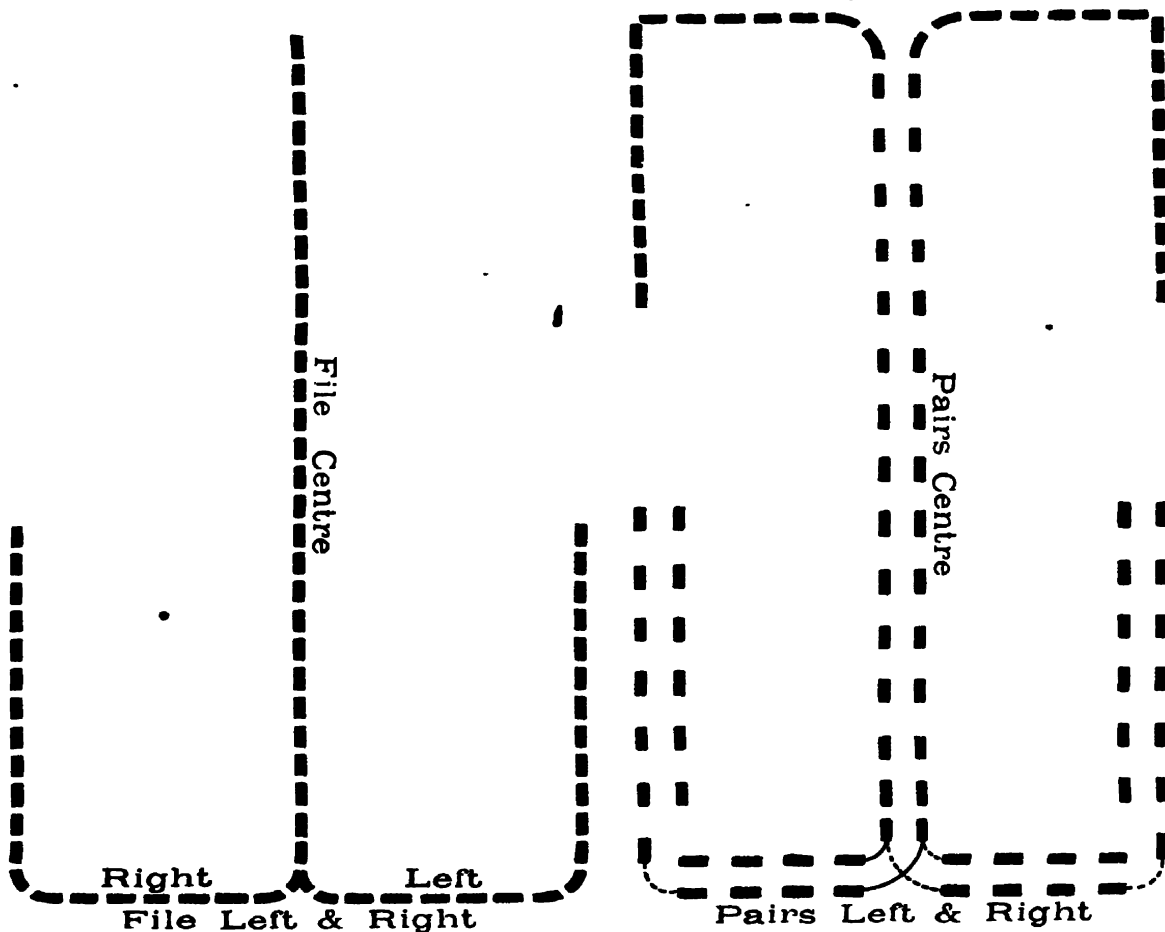


FIG. 147.

FIG. 148.

right turn to the right, and the pairs on the left turn to the left.

**"Open Order—March."**—On this command they open out in the way explained on p. 62.)

**"Fours—Left and Right."**—Wheel and march to the top of the room as before.

**"Eights—Centre."**—The fours meet in the centre, and march down in lines of eight.

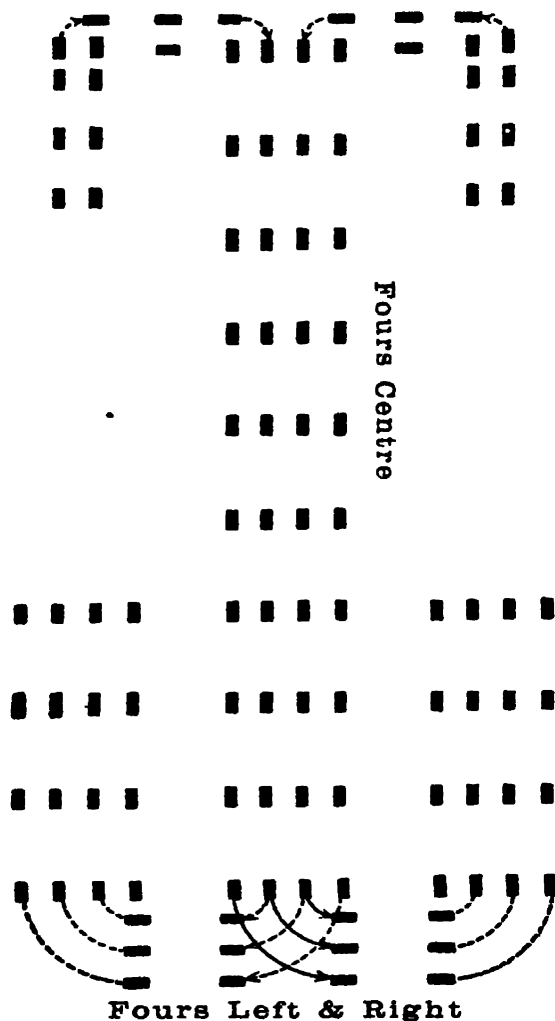


FIG. 149.

The leaders must always keep opposite each other.

In the first part of the exercise, when the files wheel left and right, the leaders should shorten step to half the length, and those following should do the same, until the whole class has wheeled, when on the teacher giving the command "*Forward*," all resume the ordinary step. The same short step must be taken

**"Fours—Left and Right."**

—The eights now divide: fours on the left, wheel to the left; fours on the right, wheel to the right, and march in parallel lines to the top of the room.

**"Fours—Centre."**

—Fours wheel inwards. On reaching the centre, those on the right wheel in behind those on the left, and march down the room in fours.

**"Pairs—Left and Right."**

—Fours divide into pairs, and proceed as before.

**"Pairs—Centre."**

—The pairs on the right wheel in behind those on the left, and march down the room in pairs.

**"File—Left and Right."**

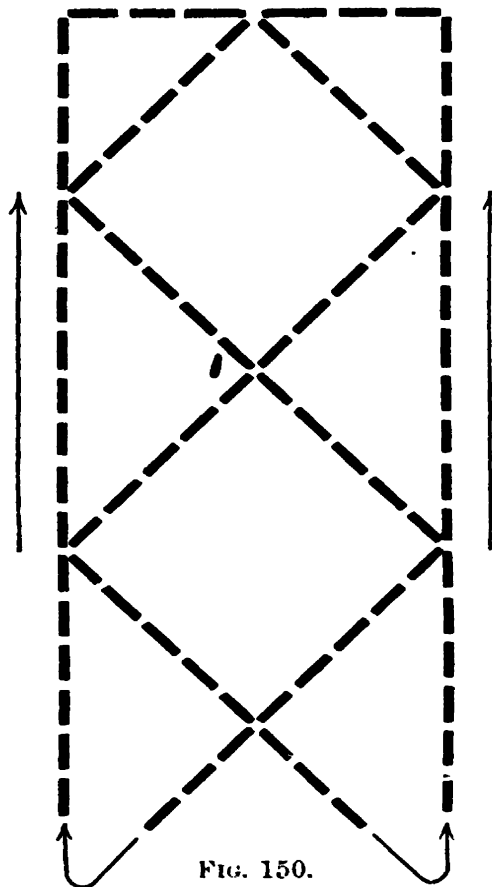
Pairs now divide to left and right.

**"File—Centre."**

—As in pairs.

*Hints.*—To make the figures compact, work in a small rectangle.

when the pairs and fours wheel off, until eights are formed. These short steps are taken to prevent the spaces becoming too wide.



Care must be taken that when the step is shortened the rate is not quickened.

When eights have been formed, and the children are reversing to single file, there is no necessity to shorten the step.

When marching in pairs, there should be sufficient space between the pairs to form into line if necessary. Proportionate distances must be kept in fours and eights.

**Figure-March II.**—March the class down centre of room, and file left and right, as in previous figure.

**“Inwards—Cross.”**—When the two files meet at the top,



they cross and march diagonally, those on the right passing behind those on the left (Fig. 150).

**"Cross."**—At this command, files turn inwards, and cross as before.

Continue this until the crossing has been done several times.

Then the files march up the room in parallel lines, and wheel to form **"Pairs—Centre."**

**"Pairs—Left and Right."**

**"Pairs—Cross."**—When the pairs meet at the top of the room they cross and recross diagonally. After proceeding down the room as before :—

<b>"Fours—Centre"</b>	"	} as in Pairs.
<b>"Fours—Left and Right"</b>	"	
<b>"Fours—Cross"</b>	"	

*Hints.*—At the crossing points, see that each one turns a little sideways in passing through.

Have marks on the floor where the crossing is to be done. See that all march straight to them, and not lose their covering to meet the one from the opposite file.

**Figure-March III.—The Spiral.**—March children round and make spiral figure at one end of the room (Fig. 151). After unwinding it form another spiral at the other end.

To prevent crowding on one another, before returning, the leader should march across the available space in the centre of the spiral, before beginning to unwind.

**Figure-March IV.—Loops.**—March class round the room, and on the command "*Loop*," the leader should form a small circle, and pass through the file again, behind No. 8, No. 2 behind 9, and so on. Continue the march and make other loops as space permits, and so on round the room (Fig. 152).

**Loop in Fours.**—Follow the first figure—march until fours are formed, then on the command "*Loop*," the first four commence a right-about wheel, and wheel in behind the fifth row, then

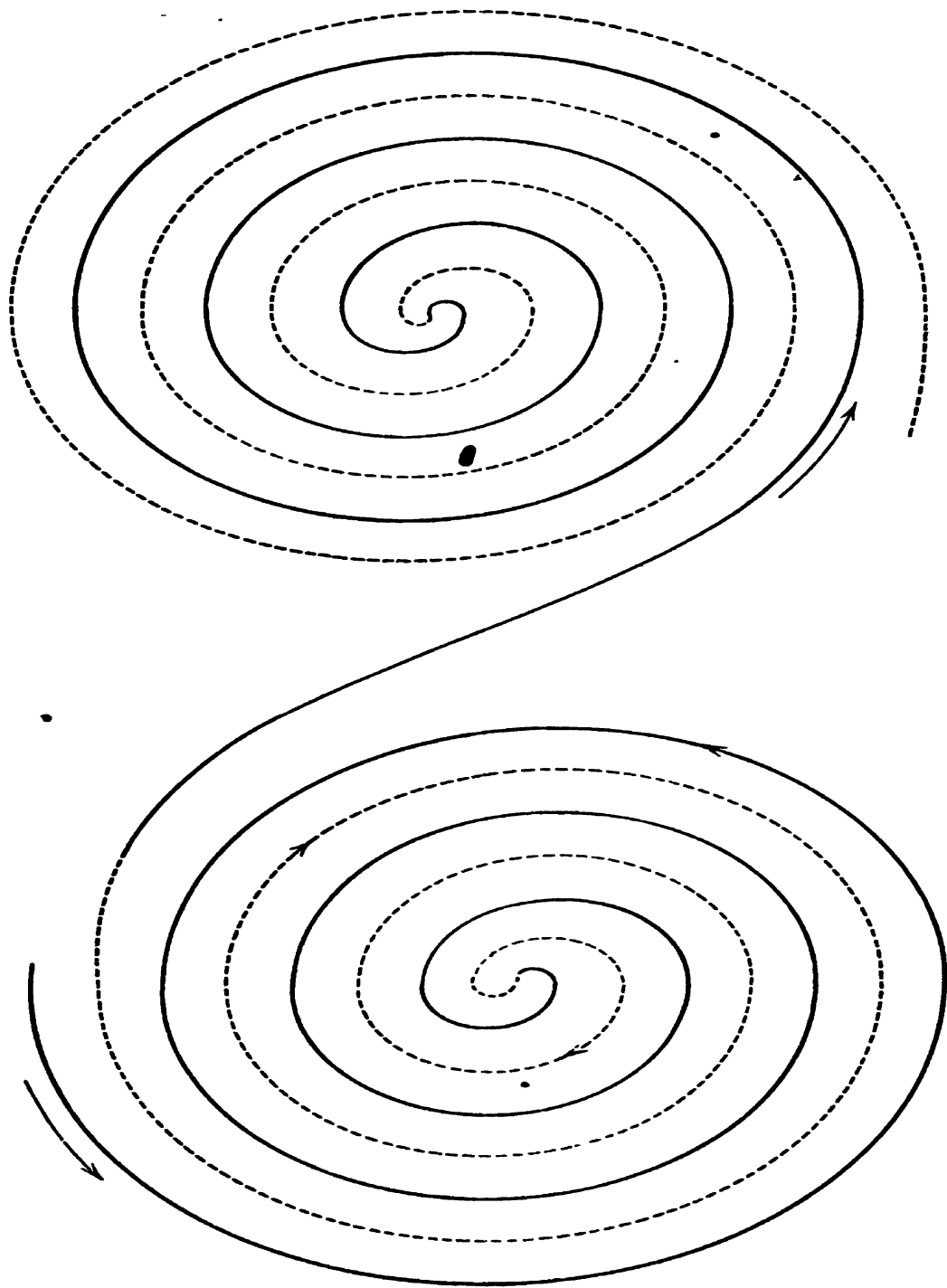


FIG. 151.

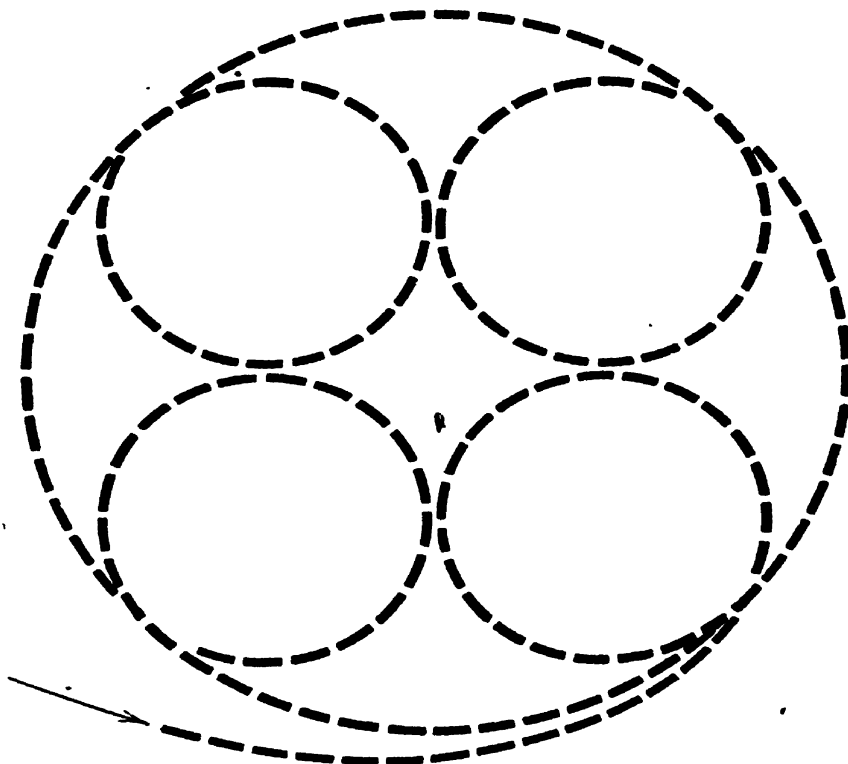


FIG. 152.

march forward until the command "*Loop*" is given again (Fig. 153).

When the crosses and loops have been thoroughly taught, numerous other figures will suggest themselves to the teacher.

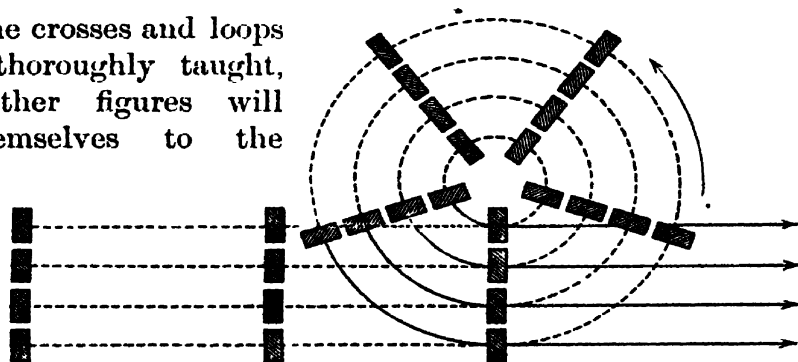


FIG. 153.

## XII

### A FIGURE-MARCHING EXERCISE FOR A CLASS OF THIRTY-TWO

NUMBER the class which is standing in line from 1 to 32 ; then a second time in eights. Practise wheeling to left and

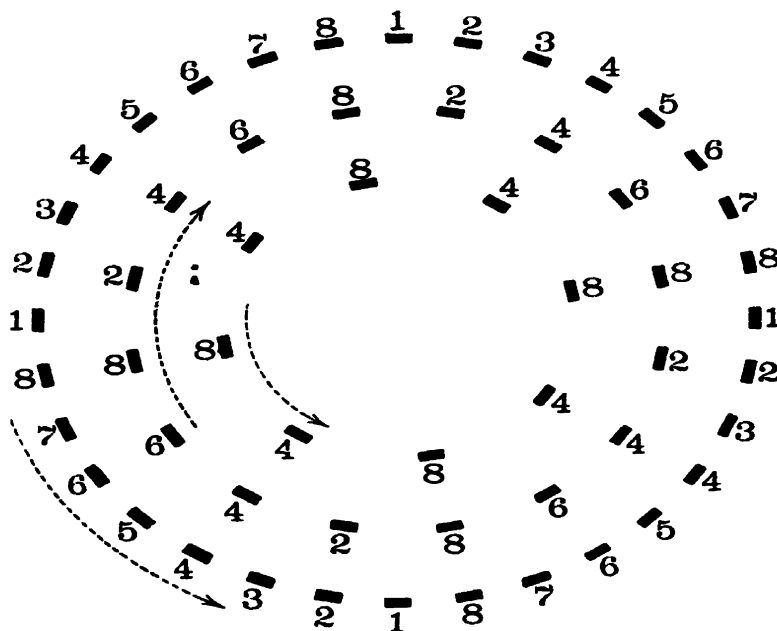


FIG. 154.

right (forwards and backwards) in fours, eights, and sixteens. Wheeling in fours has been fully described, and wheeling in

eights and sixteens is similarly performed. March round the room in single file, and form one large circle.

**"Change."**—At this command all the even numbers at once turn half-way round on the ball of the foot, and form an inner circle, marching in the opposite direction to the outer one.

**"Change."**—On this command the fours and eights turn as before, and form a third inner circle, marching in the opposite

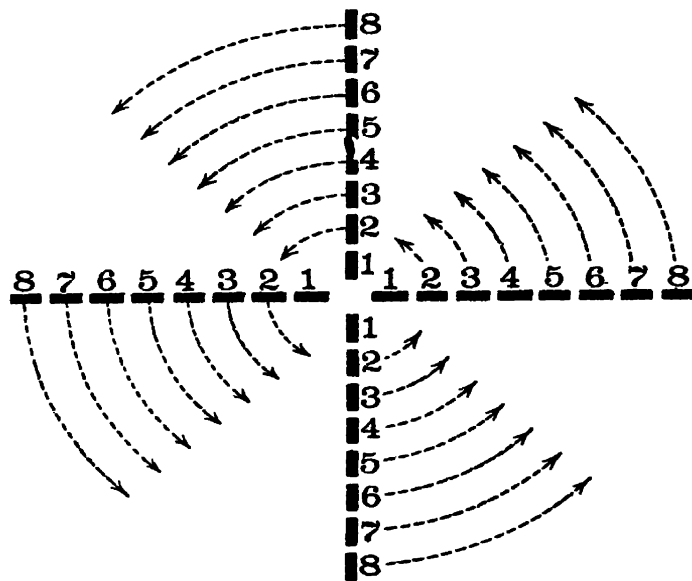


FIG. 155.

direction to the second. This gives three concentric circles (Fig. 154).

By two *changes* revert to the original circle. In reversing the figure mind and give the command "*Change*," as the scholars are near to the space to which they belong.

All are now marching again in one circle.

The class is numbered in eights.

**"Centre."**—At this command the number ones, followed by the other seven, wheel inward to the centre of the circle, and a cross is formed (Fig. 155).

**"Halt"** when the four lines meet at the centre of the circle.

**"Right Turn."**

**"On the Centre—Wheel."**—Number ones, who are nearly touching in the centre, are the pivots, and the four lines wheel round. Keep it steady by alternately wheeling four steps, and marking time four steps (see Fig. 155).

**"Right-about Turn"** in four steps and wheel in the opposite direction.

**"Halt."**

**"Outside Fours"** (Nos. 5, 6, 7, 8) **"Right-about Turn."**

**"Wheel."**—The outer fours will now move in the opposite direction to the inner fours.

**"Mark Time"** after four steps, and the outside four will be

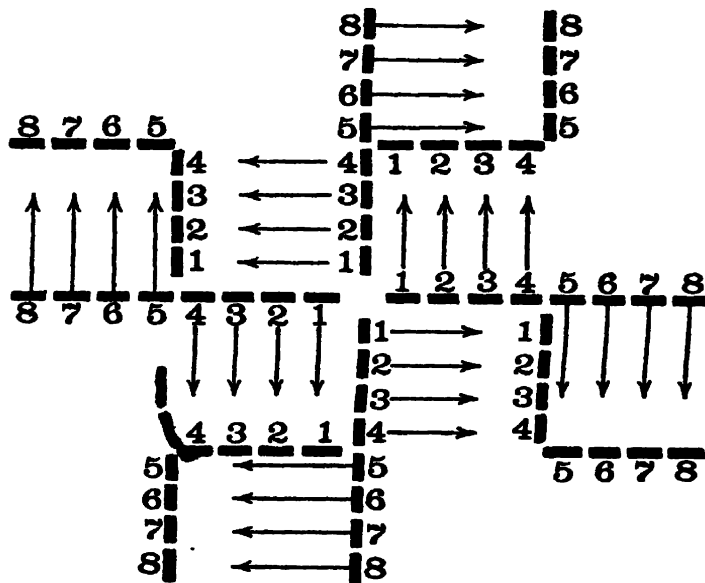


FIG. 156.

joined to the next inner four. Follow this up until all meet at their original places.

**"Four Steps Forward."**—At this command the outer and inner fours in each row take four steps forwards, which will bring the outer four of one row to a right angle with the inner four of the next row (Fig. 156).

**"Four Steps Forward."**—On taking these four steps forward all the fours will now be separated.

**"Right-about Turn."**—At this command all turn right about.

**"Four Steps Forward."**—Right angles are now formed again.

**"Four Steps Forward."**—The eights are now together again.

**"Outside Fours—Right-about Turn."**—Eights are now all facing the same direction.

**"Right Turn"** and form a circle again, representing a movement the reverse of that by which the cross was first formed.

While working this scheme of figure-marching, the children should keep moving all the time (either marching or marking time) except at those times when a "*Halt*" is specially given.

### XIII

#### TABLE OF EXERCISES FOR FOUR SHORT LESSONS IN SCHOOL

<b>Monday</b>	. .	Arm exercises, Nos. 1, 2, 3. Head movements.
		Combination exercises, Nos. 1, 3, 5.
<b>Tuesday</b>	. .	Arm exercises, Nos. 4, 5, 6, 7. Body (trunk) movements.
		Combination exercises, Nos. 7, 8.
		Arm exercises, Nos. 8, 9, 10. Feet and leg movements.
		Combination exercises, 2, 5, 7.
<b>Thursday</b>	. .	Arm exercises, Nos. 1, 2, 3, 4. Body (trunk) movements.
		Combination exercises, Nos. 7, 8.
<b>Daily</b>	. . .	Turns; Dressing; on and off forms—in and out of desks.

- Standard I. Take exercises for Monday and Tuesday only.  
Standard II. Take exercises for Monday, Tuesday, Wednesday.  
Standards III. and upwards. As arranged.



Once a week the classes should assemble in the yard, at single or double arm's distance, and go through the exercises arranged for Monday, Tuesday, and Wednesday.

The commands should be given by the teacher in charge, the others being present to see to the discipline of their own classes.

# XIV

## TABLE OF A YEAR'S DRILL AND EXERCISES FOR EACH STANDARD IN THE PLAYGROUND<sup>1</sup>

### BOYS

Stand- ard.	Marching.	General Drill.	Exercises.
VI.	(a) March at a uniform rate at even distances, and with a good carriage. (b) Change step, and do the Right-about turn on the march. (c) Counter-marching. (d) March in line, backwards and forwards. (e) First simple figure-march. (f) Marching in fours. (g) Running.	(a) The turns Right turn, Left turn, Half-right turn, Half-left turn, Right-about turn. (b) Dressing of lines. (c) Wheeling in fours, forward and backward. (d) Opening and closing of ranks for exercise.	(a) Indian club exercises, or (b) Stave exercises, Nos. 1 to 9.
V.	Same as VI.	Same as VI.	Dumb-bell exercises, Nos. 3, 11, 14, 17, 19, 20.
IV.	Parts (a), (b), (d), and (g) of VI.	Same as VI.	Dumb-bell exercises, Nos. 8, 10, 12, 13, 16, 18.
III.	Parts (a) and (g) of Standard VI. Change step on the march.	Same as VI.	Dumb-bell exercises, Nos. 1, 4, 5, 6, 7, 9, 12, 15.
II.	Part (a) of Standard VI.	Right, Left, Half-right, and Half-left turns. March to positions for exercises instead of Wheeling, etc.	Exercises for Monday, Tuesday, and Wednesday of School Table. Forward and side lunges.
I.	March in step.	Right and Left turns as in Marching. Right and Left turns by numbers. March to positions for exercises.	Exercises for Monday and Tuesday of School Table.

<sup>1</sup> The scholars should thoroughly learn Marching, General Drill, and Free Exercises before attempting to work this Table of Playground Exercises.

In mixed schools the Playground Table for Girls should be used.

These Tables are arranged for the children to have different exercises in each Standard, and different apparatus as far as possible.

TABLE OF A YEAR'S DRILL AND EXERCISES FOR.  
EACH STANDARD IN THE PLAYGROUND

## GIRLS

Standard.	Marching.	General Drill.	Exercises.
VI.	<p>(a) March at a uniform rate, at even distances, and with a good carriage.</p> <p>(b) Change step, and do the Right-about turn on the march.</p> <p>(c) Counter-march.</p> <p>(d) March in line forwards and backwards.</p> <p>(e) First figure-march.</p> <p>(f) Marching in fours.</p> <p>(g) Running parts (a) and (c) of above.</p>	<p>(a) Turns. Right turn, Left turn, Half-right, Half-left, and Right-about turn.</p> <p>(b) Wheeling in fours, forward and backward.</p> <p>(c) Opening and closing of ranks for exercises.</p>	<p>(a) Indian club exercises, or</p> <p>(b) Stave exercises, Nos. 2, 3, 7, 10, 11, 12, 13, 14.</p>
V.	Same as VI.	Same as VI.	Stave exercises, Nos. 1, 2, 3, 4, 5, 6, 8, 9.
IV.	Parts (a), (b), (d), (g), of Standard VI.	Same as VI.	Dumb-bells, Nos. 2, 8, 10, 12, 16, 18.
III.	Parts (a) and (g) of Standard VI. Change step on march.	Same as VI.	Dumb-bells, Nos. 1, 4, 5, 6, 7, 9, 12, 15.
II.	Part (a) of Standard VI.	Right, Left, Half-right, and Half-left turns. March to positions for exercises instead of Wheeling, etc.	Exercises for Monday, Tuesday, Wednesday, of School Table.
I.	March in step.	Right and Left turns as in Marching. Right and Left turns by numbers. March to positions for exercises.	Exercises for Monday and Tuesday of School Table.









